

An impressionistic landscape painting featuring a body of water in the foreground, a small town on a distant shore, and a sky filled with large, billowing clouds. The style is reminiscent of J.M.W. Turner's work, with visible brushstrokes and a focus on light and atmosphere. The colors are vibrant, with deep blues in the water and sky, and warm yellows and oranges in the clouds and distant buildings.

DEVIN KORWIN

**CREATIVE  
FUNDA-  
MENTALS  
VOL. 2**


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Front cover image by Isaac Levitan.

*Lake*, ca. 1900.

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# FOREWORD: THE LANGUAGE OF PAINTING

Art is not a topic with a lot of definitive answers. Even with a strong desire to learn, there are too many “well, it depends” for comfort as a beginner who is grasping for a foothold of truth. While it’s true that there are no definitive answers as to what ideas are worth expressing with painting and how exactly to do so, where the answers do lie are in the elements of the language of painting and how they work. An idea that will be introduced in the first chapter, The Pyramid of Fundamentals, is a broad, top down overview of all of these elements. Since painting is a visual language, the elements described in the pyramid are the grammar, syntax, and vocabulary of this language. And just like a written language, those elements become more than the sum of their parts when used to communicate a higher idea.

One of the most important aspects of understanding a complicated topic is in seeing the greater context, how all the smaller components play their part in the larger whole. When I was younger, I had a lot of trouble learning math because I couldn’t see why these complicated ideas were needed in the first place, and more importantly, I couldn’t feel that problem in my own life. Learning formulas and processes without knowing why I needed them was incredibly difficult. With a personal understanding of the problem, the solutions start to become exciting. In Volume 2, we’ll explore the larger context of the problem of having a visual idea to express, and the solutions offered by the visual language.

A visual language is best suited for expressing visual ideas - For example, saying “these warm clouds look nice against the blue sky” or “check out those straight lines compared to those curves” would not be worth writing down on its own, and carries none of the emotional impact of the original inspiration. These same ideas, when expressed in a manner sympathetic to the creative impulse, definitely could make a great painting with a lot of emotional weight, communicating that visual idea effectively between many people.

Learning a language without context can be difficult. If you are learning Japanese and you are living in the middle of Kansas, and you are never speaking it with native speakers and have no reason to learn it beyond a general interest, it will be very difficult for it to stick. However, if you are in Japan, and you need to ask for directions or find out something you really need to know, suddenly you have a goal, and you will pretty quickly pick up what you need in order to communicate, and it will stick. Even if this one event won’t lead to an immediate mastery and fluency, you’ll have some practical knowledge that you can build on when you have another idea that you need to express, and some more confidence in having used the language effectively in a real-world situation.

Painting is too large of a subject to tackle without focus, but with a goal in mind the next steps for studying become clear, and progress can be built upon in a logical order as those goals are met, always keeping the context of the visual language in mind. Studying the disconnected elements without an idea to express is like studying the particularities of Japanese grammar without ever having asked for the time.

I would caution against learning painting by imitating someone else’s process too early. This skips the idea phase, and if you learn a specific process then every idea must conform to the process you know. If all you have is a hammer, everything looks like a nail. This can be very hard to undo later, but it is tempting for beginners because it leads to faster and more polished results, co-opting the answer to somebody else’s question. If the goal is to be a unique artist, then learning the language of painting outside of any one particular style is how to accomplish this, because it allows us to express what already makes us unique.

Do we need a lofty written artist’s statement to justify the ideas behind our paintings or give them meaning? No, and if we need a written language to give meaning to a visual one, then this could be a sign of not effectively taking advantage of the medium’s unique strengths. All it takes is a little bit of introspection to determine what ideas we find important and want to communicate: what gives you that feeling of wanting to paint? With some practice, that impulse can be noticed more quickly, and as we get more attuned to the mechanics of the language, the specific methods to express that idea become an exciting creative expression of their own. Process becomes a means to express how we feel, rather than something that we must conform our ideas to in order to even express them. The fun of painting comes when you can focus on what you truly want to say, and not struggle with the means to express it. An artistic idea can even be about the language itself, a meta-examination which is the idea behind a lot of contemporary non-representational work. This is certainly true for disciplines beyond painting as well.

Seeing the way that different artistic movements connect can make it clear how they all share a common theme: the manipulation of contrast. Painting, writing, music, dance, etc., are all different languages that are exploring the same thing in different ways with unique strengths of their own. Comparing *this* vs. *that* is a large part of how we make sense of the world, and it likewise gives art a lot of its power. With that said, Let’s dive in further and explore this amazing visual language.

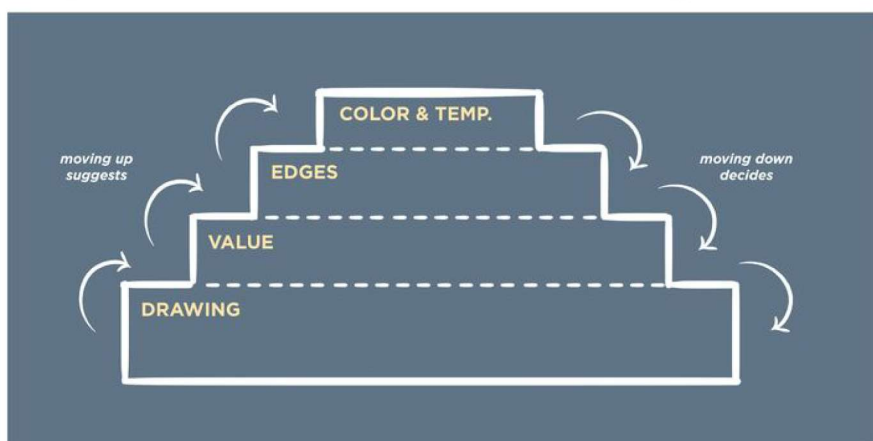
**Devin Korwin**



## 01

# THE PYRAMID OF FUNDAMENTALS

Drawing, Values, Edges, Temperature & Color. That's all. With just four humble elements of painting, it all starts to look a lot less intimidating. Just as there are only twelve notes with an infinite variety of music contained within, there are infinite ways to use these four elements to communicate. It is exactly that contrast between the limits of an established means of expression vs. the limitless ways to express a new idea that makes art so interesting.



As we move up the pyramid, each step is dependent on the one that comes before. Being higher on the pyramid does not suggest importance, but rather a higher number of dependencies with the elements below. Color, at the top of the pyramid, has the most dependencies, and when we make a brushstroke in full color we have as a consequence decided on each of the lower steps as well. Drawing, at the base of the pyramid, can suggest all of the higher steps with shorthand. Just like in writing, visual shorthand can be a guide for ourselves as to how to add the necessary information and take a sketch to a finish, an idea that will be explored further in the next chapter.

Each element contains its own hierarchy of contrast, a comparison between two opposites organized on a scale. Each artistic medium can express a different possible range for these hierarchies. One of the most important hierarchies in **drawing** is the contrast between the conceptual and the optical, or the 3D conception vs the 2D image. This can also be described as what we know vs. what we see, and will be explored fully in chapter 3. Another drawing hierarchy is the contrast between unity and variety, which will be discussed in chapter 6, as well as one that is more obvious, the contrast between straight lines and curved lines (which was explored in Volume 1 in the chapter *Principles of Contrast*).

Fig. 1. The Pyramid of Fundamentals is a visual representation of the elements of the language of painting. It all starts with an idea that we want to express. Then, we can consult the pyramid as a guide to the tools that we can use to communicate our idea. Each element of painting contains one or more hierarchies, or a comparison between two opposites with a cascading degree of importance. The pyramid acts as the mechanics of the visual language.

*“Drawing, at the base of the pyramid, can suggest all of the higher steps with shorthand.”*

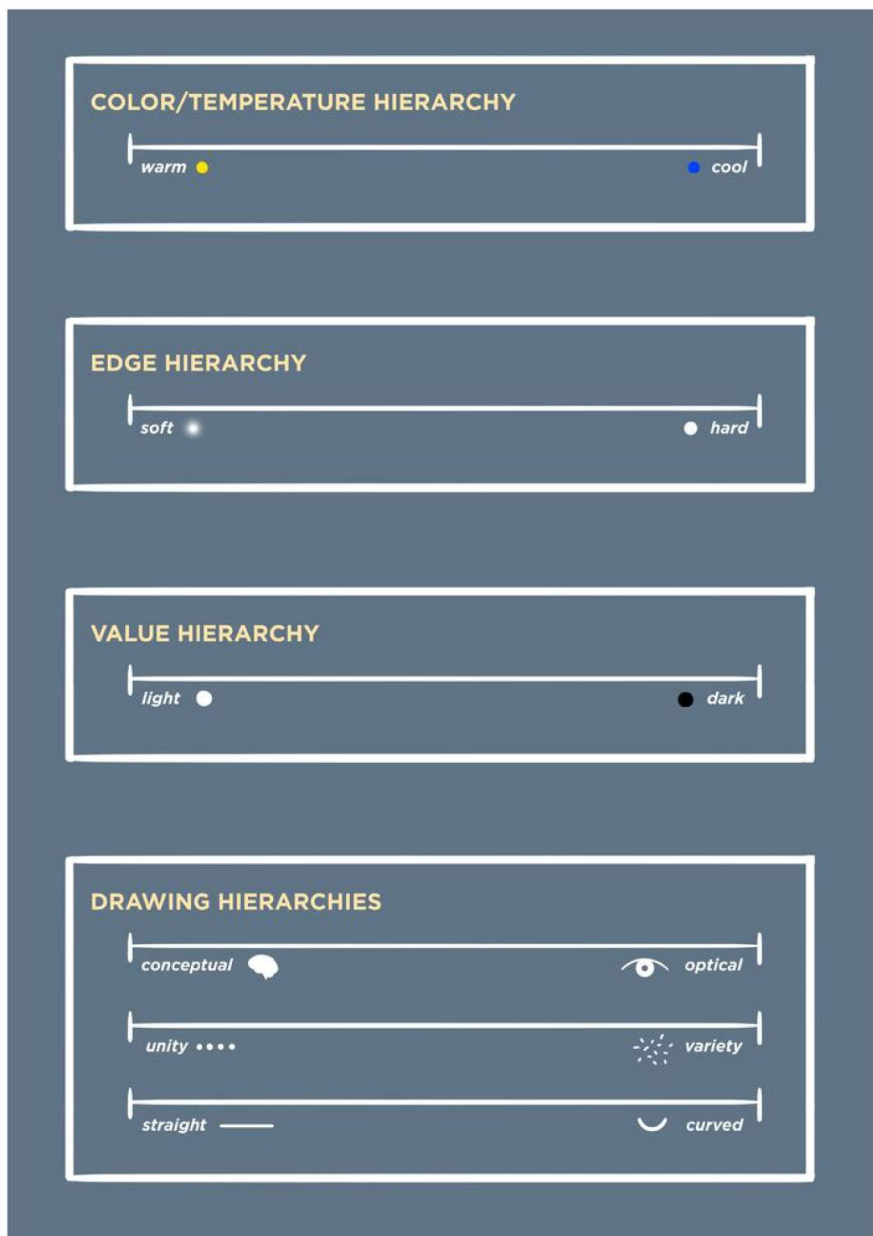


Fig. 2. The Pyramid of Fundamentals. it all starts with an idea that we want to express. Then, we can consult the pyramid as a guide to the language that we can use to communicate our idea. Each element of the language has its own hierarchy or hierarchies of contrast. This list for drawing is not exhaustive, for example another drawing hierarchy is big vs. small. As the foundation of the pyramid, drawing hierarchies are an area with the possibility for a lot of creativity.

*“Drawing, at the base of the pyramid, can suggest all of the higher steps with shorthand.”*

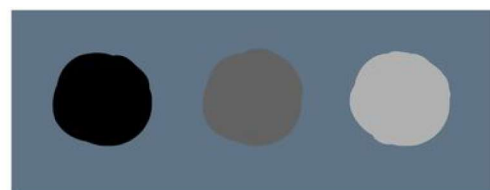
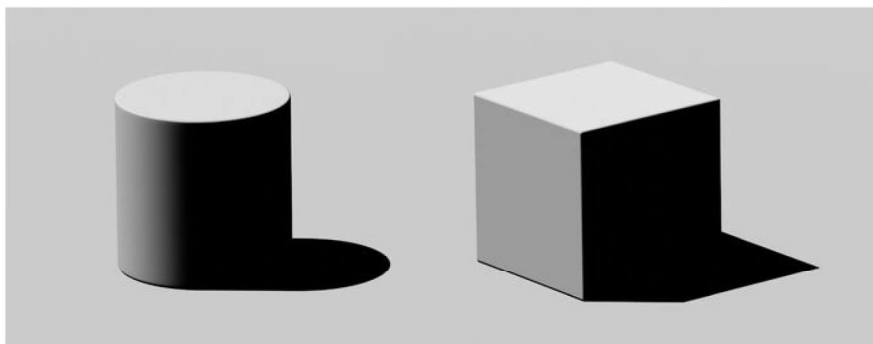


Fig. 3. A value decision is made up of a shape, making it by extension also a drawing decision.

The next step on the pyramid after drawing, **value**, has a hierarchy of contrast between light and dark. For each medium, the range of values that can be expressed is different, just as different media can also express different ranges of edges and color. For example, with oils and digital painting, we can get a fairly wide range, but with pencil this range is smaller. When we make a value decision, the brushstroke or mark of value that we put down is also a shape and thus a definitive drawing statement.



With **edges**, the next step of the pyramid, there is a hierarchy of contrast between soft and hard. How does this relate to the previous steps of value and drawing? Why is an edge statement also both a value statement and a drawing statement?

A soft edge is simply a gradient between two pre-determined values (a value decision) and those values make up 2D shapes which are drawing decisions. We can also suggest elements that are higher up on the pyramid, and one example of this would be in the relationship between edges and value (first explored in Volume 1, *A Hierarchy of Edges*). For example, we can use only two values to suggest a soft edge. This would be a shorthand to use in pen and ink, a medium that is not suited to actual gradations of value. In addition to soft and hard edges, a lost edge is also a value decision. We can lose the edge of the cylinder that is facing the light, and while we know it is still there, our brain fills in the information due to compressing the close values of the figure and background together into one.

With **temperature and color**, the most fundamental hierarchy of contrast is between warm and cool. Since this is the top of the pyramid, when we make a color decision we are making a definitive statement about all of the previous steps. The yellow circle in Figure 5 is a color, edge, value, and a drawing decision. The relationship between value and color will be explored in greater detail in chapter 7.

While looking at this broad overview that the pyramid provides, we can see that drawing is the most foundational element of painting, is a way to explore contrast, and in this way it bridges the gap between what are usually considered two separate disciplines.

While the pyramid does show how these elements relate to each other, it does not say anything about the validity of an artistic idea that focuses on one element over another. For example, impressionism focuses on expressing color ideas over drawing, but still embraces the idea that color is based on a foundation of drawing. An academic value study might focus on drawing, form, and value over expressing experimental color ideas, but still embraces the fact that those value decisions are already communicating color.

*“...drawing is the most foundational element of painting...and in this way it bridges the gap between what is usually considered two separate disciplines.”*

Fig. 4 (opposite). Edges sit above value and drawing on the pyramid, making an edge decision is also a value and drawing decision. Soft edges are gradients of value, and values are comprised of shapes. Lost edges are where values are close enough to be merged into one value group, such as with the cast shadow and the form shadow in these objects.

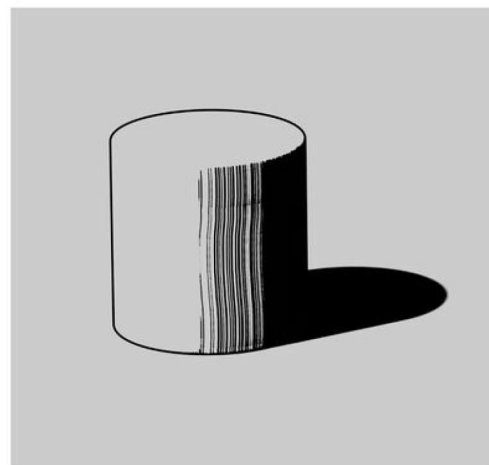


Fig. 5 (above). Drawing can suggest elements higher up on the pyramid using shorthands. Here, without using any actual gradients, a soft edge can be suggested with hatching.

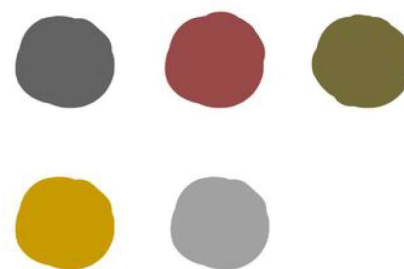


Fig. 6. In the top row, the first grayscale value can suggest a number of possible colors. In the bottom row, a color decision has already decided on one specific value, along with edges and drawing.





Fig. 7. Claude Monet *Pont d'Argenteuil*, 1874. This painting explores color ideas, but with an awareness of how color is supported by all of the previous steps of the pyramid. When using color, you are also deciding on edges, values, and drawing.

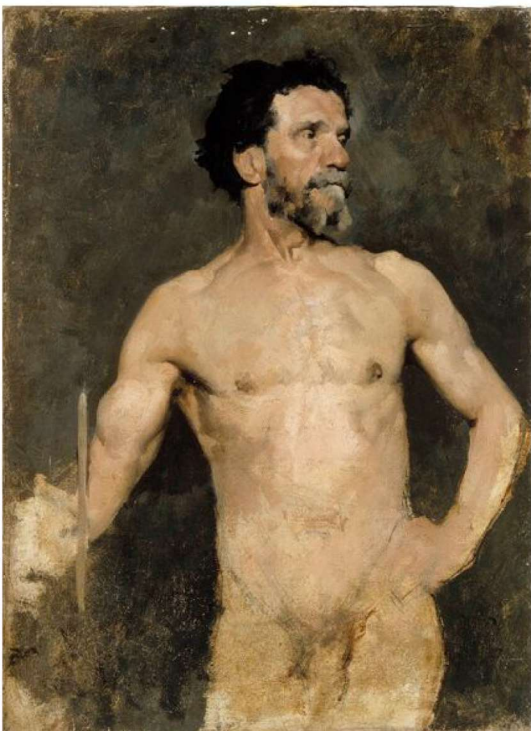


Fig. 8. Albert Edelfelt *Male Model Study*, 1874. This academic study from the same year focuses more on drawing and value, but the earliest drawing and value decisions also decide on the possible range of colors.

The pyramid works based on contrast, each of the elements have their own hierarchy working simultaneously, and by comparing the big relationships we can naturally compress a large range of information contained in these hierarchies into smaller components that we can manipulate easily to convey an artistic idea.

With a heavily compressed two value statement, as in figure 9, only either black or white, we can see how we can now easily control the figure to ground relationship, and thus contrast. The lost edge in light is an edge, value, and drawing statement. By placing dark on dark, we have another lost edge. By having light on dark at the top, we have an expression of difference, and the form reveals itself, and dark on light on the bottom we have another difference expressed in another way to reveal the dark part of the form. These same decisions about contrast happen with a full value range, simply with more groups, but by starting like this we can explore what painting and drawing really is: controlling contrast.

Each element's hierarchy of contrast can be compressed in this manner. This is more straightforward for something like values, but how can drawing be compressed? Complex curves can be compressed into simple straight lines, and small compositional elements can follow an overarching gesture. Areas of detail can be abstracted in various ways. In this Sorolla painting in Figure 11, the shapes and complexity of information are compressed and abstracted outside of the focal point. In later chapters, we will explore more how to use compression, and how exactly contrast works to communicate ideas.

*“...by comparing relationships, we [can have] smaller components that we can easily manipulate to convey an artistic idea.”*



Fig. 9. With two values, figure and ground relationships (a drawing decision) can be easily mapped out. The top of the cylinder is a light figure on dark ground. The bottom right shadowed side is a dark figure on the dark ground of the shadow. The right side is a dark figure on a light ground, and the bottom left side is a light figure on a light ground. Where there is no difference in value, a lost edge is created. The top plane of the cylinder has no gradient, making the drawing decision of a fast plane change, while the gradient on the curve is the drawing decision of a cylindrical form. With this foundation of drawing and value, similar relationships of edge and temperature contrast can be added, such as warm against cool, soft against hard, etc. A simple sketch can contain a roadmap of simultaneous contrasts and their place in a hierarchy: the bottom leftmost side is both light against light, warm against cool, and is also a lost edge.

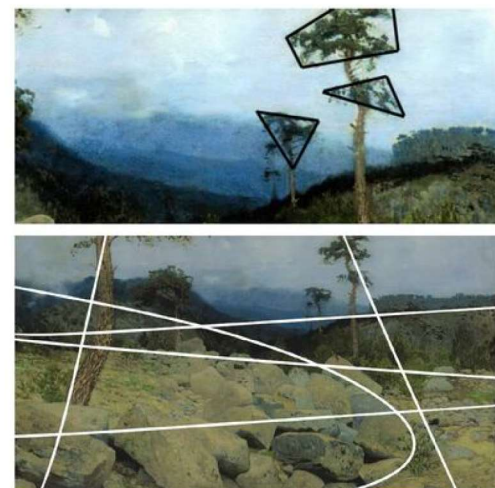


Fig. 10 (above). Isaac Levitan *In the Crimean Mountains*, 1886. Detail can be organized to follow simple shapes, and entire compositions can follow the gesture of simple lines, creating a simple contrast between straight lines and curves, all of these being drawing decisions.

Fig. 11 (opposite). Joaquín Sorolla *Niños en el Mar, Playa de Valencia*, 1908. Drawing can be compressed through abstraction.



## 02

# DRAWING & PAINTING

If drawing conjures images of line art, pencils, and sketchbooks, try thinking of it in a broader way. When we redefine this term for ourselves, it gives a much clearer idea of how to study art and allows real breakthroughs to happen while practicing.

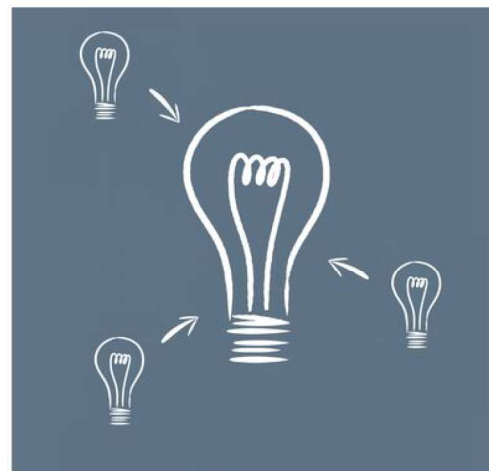


Fig. 1. Drawing starts with an idea that we want to express. It can contain supporting ideas, but these should all bolster and support the main one. Drawing is a way to show visual contrasts which communicate an idea to the viewer.

Fig. 2-3. Isaac Levitan *Summer Evening*, 1900. All of the contrasts and relationships possible in the Pyramid of Fundamentals can be mapped out in a sketch using shorthand, which can then be used to create a finished work that makes that information explicit. Both the sketch and the finished painting contain drawing, or the exploration of relationships and contrast.





Fig. 4. Jean-Paul Laurens *La mort de sainte Geneviève*, 1877-1880.

There is one thing that makes the visual language necessary to begin with: the idea that we want to communicate. Imagine that you are trying to convince someone to come around to your point of view. When communicating, it would be most effective to argue one idea, with every other idea that you present supporting the main one. This is true in painting as well. One common problem is trying to communicate too much in one painting. An effective paper has a main thesis statement, and then supporting ideas that all lead back to that to bolster the argument. The drawing decisions that we make all communicate something. If we unconfidently draw three lines where one would do, it is akin to mumbling when we speak. There is one idea to express, and the visual tools support that idea, and this makes for an effective and clear statement.

Drawing has nothing to do with any particular medium or style, so when we practice our drawing, we are practicing all of the topics that fall under that umbrella: perspective, anatomy, structure, how light falls on a subject, the value of each plane in relation to the light, etc. Craig Mullins describes drawing as "organization and expression of relationships."<sup>1</sup> This definition includes composition, and we can see that reflected in the pyramid in the contrasts between straight lines and curves, as well as variety and unity.

The visual language works based on contrast, and contrast is comparing the relationship between two things. With drawing being the expression of relationships, it's clear that when you draw and paint you are designing. Crafting a strong, singular idea supported by all of the decisions made in the painting is design, and since drawing is at the bottom of the pyramid, a strong drawing can act as a roadmap and contain information that we can use in service of a larger idea. This gives clarity not only to the purpose of sketching and studies, but also how to tackle large complex pieces and not lose sight of the idea that we want to convey over the long process of working.

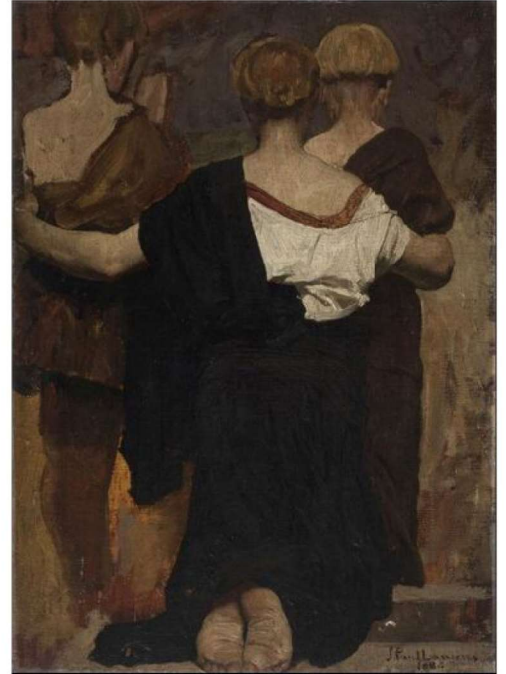


Fig. 5. Jean-Paul Laurens *Étude pour La mort de sainte Geneviève*, ca. 1877. Studies contain information about important relationships.



Fig. 6. Paul Delaroche *Study for the Execution of Lady Jane Grey*, 1832. With a strong established idea, details can be studied and then "squared up" for transferring to the finished work.





A strong main idea comes from our minds, and therefore the ability to sketch compositional ideas from imagination is very important. Sometimes compositional inspiration comes from reference, or when painting the landscape from life, but we need these skills to be able to adapt what we see to serve an idea.

After the idea is worked out, reference can be made that matches the sketch as closely as possible, and in depth studies can be done. The studies can be directly transferred to the final painting, using all of the shorthand contained within drawing to finish, and it will be in sympathy with the original idea. Any artist knows how hard this can be while working over weeks or months, and this keeps a straight line between the idea and the end product, reduces the chance of tunnel vision, and builds confidence to work on larger, more complex pieces due to its reliability.

Outside of composition, drawing also includes depicting form in space, which leads to the study of more conceptual ideas like perspective, planar structure, and others, but with the new definition we can always relate these back to the higher concepts of design, and when we study it keeps it in the service of artistic ideas. The thought processes of design are happening outside of the medium and without an arbitrary distinction between line and tone. Studies contain all of the ideas of the finished painting, by noting down important relationship. The drawings can be accurate in relation to the relationships we see, but also artistically accurate within the context of the painting and our intention.

*“A strong drawing can act as a roadmap and contain information that we can use in service of a larger idea.”*

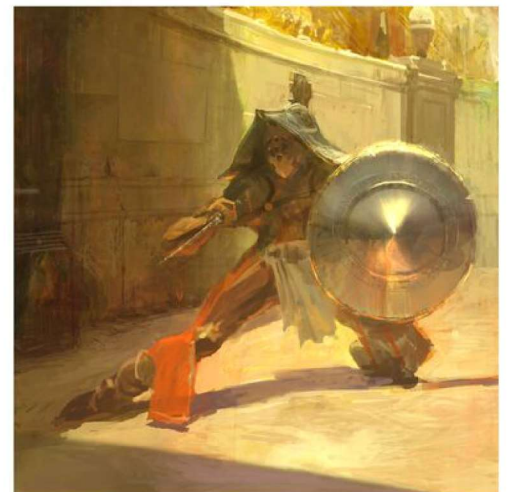
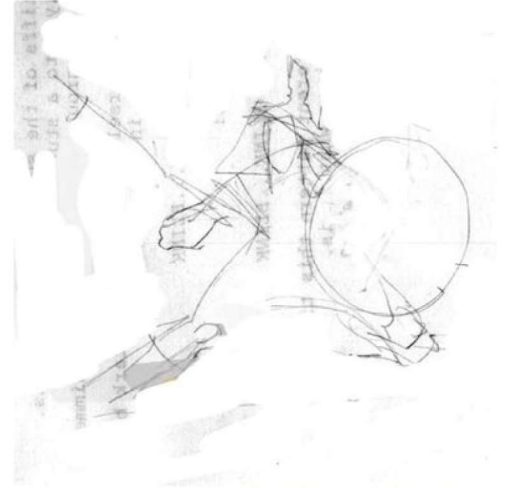


Fig. 7-8. (above) Craig Mullins *Attacking Gladiator*, ca. 2000s. The sketch contains many of the drawing relationships that are present in the finished painting.

Fig. 9-10 (opposite, above) Adolph von Menzel *Model Study After a Standing Young Man*, 1854, and *Artist's Model, Seen in Back view, Putting on an Eighteenth-Century Uniform*, ca. 1800s. These studies contain notes and shorthand for organizing things like value groups, relationships and proportion. The relationship between shadow, midtone, and highlights can be expressed in simple groups, even if they are not literally the same value as what is seen.

1. Interview with Craig Mullins, 2019. <https://www.ageofempires.com/news/interview-with-craig-mullins-an-age-of-empires-illustrator/>





Fig. 11 (opposite). Lawrence Alma-Tadema *Exhausted Maenides after the Dance*, ca. 1873-1874. This unfinished painting gives an insight into how the sketch can be "uncompressed" into the final painting.

This new definition bridges the gap between drawing and painting. Painting *is* drawing, any style or medium can apply to improvement in painting. Working on our drawing is an endless journey, and our paintings can only be as good as our ability to draw. We can endlessly improve here, as long as we have new ideas and we want to express them clearly.

Now we can see why sketching in a medium like pencil or ink can be so useful. It is targeting those areas at the bottom of the pyramid, drawing and value, and also makes us practice compression due to the limited information these mediums can express. While we could take possible processes away from this, it is always our brains that dictate the expression of relationships and interpret what they mean to us. Any process can work, and a strong understanding of the fundamentals of the visual language gives the power to change course and direction as we feel is needed. Painting can be a back and forth conversation, and we can stay open minded to new possibilities of how to express our ideas. Be skeptical of dogmatic processes or any one way to do things, because that is not where definitive answers lie. Rather, painting is like an experiment, and the more experimentation we do, the more information we will have about what actions lead to certain results. Then, when confronted with a new situation, we can dive into our bag of tools gained through mileage and see if we can adapt them to meet our needs.

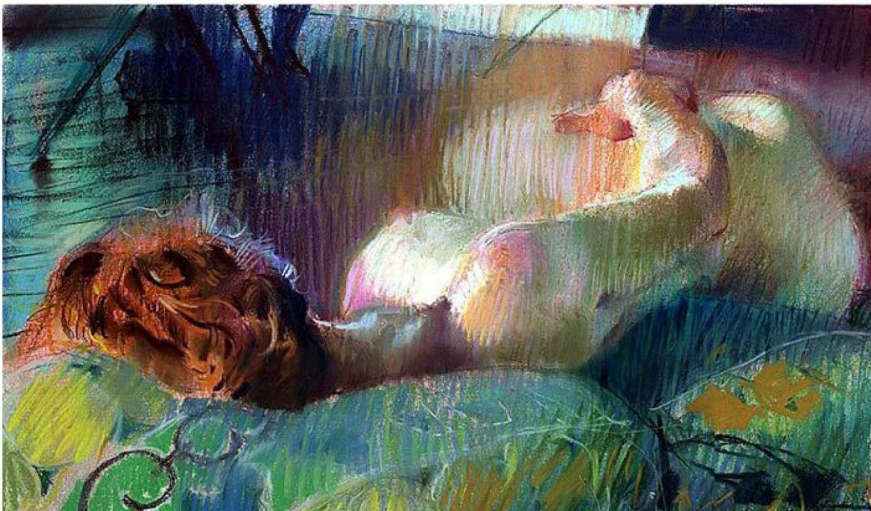


Fig. 12 (above). Craig Mullins *Drawing*, ca. 2000s. In this sketch, edges, values, and even color is suggested. Relationships such as the dark on dark of the chest and background is established, the light on light of the arm and background, the dark on light of the arm in shadow against the torso, etc.

Fig. 13 (opposite). Craig Mullins *p009*, ca. 2000s. Each medium, such as pastel, offers unique ways of approaching the fundamentals, but it is always about conveying the expression of relationships.





Fig. 14. Ivan Shishkin *Edge of the Forest*, 1890.



Fig. 15. Ivan Shishkin *Fields and Groves*, ca. 1880s.

In the examples on this and the following pages, we can see all of the information contained in the finished work suggested in the sketches and studies. In Ivan Shishkin's outdoor sketches, we can imagine that he would be able to use this information to make a finished work in the studio. In the sketch, there is a clear use of the paper tone, a very dark value, as well as one intermediate value. These three compressed values make a very clear and readable statement in a medium such as pencil, where it is only possible to go darker than the paper value. In oil paint, where there is more flexibility, there is still a strong compression and grouping of values, and it is rare to need more than four value groups.



Fig. 16-17. Isaac Levitan *A Quiet Monastery*, 1890. Observe what information the artist found important to note in the sketch and how it was translated into the final painting.

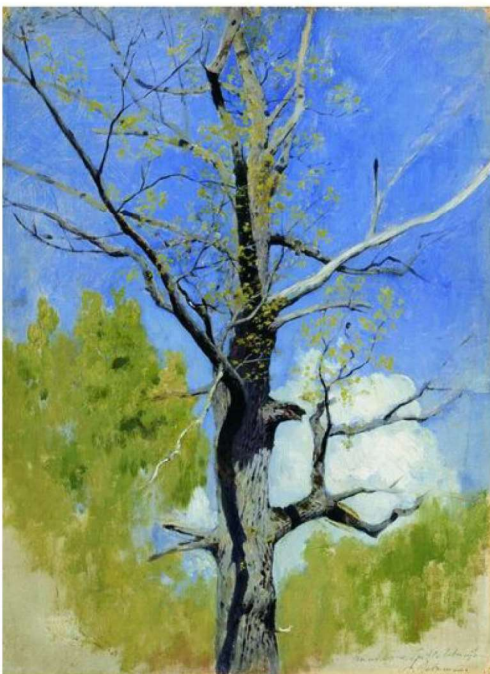


Fig. 18-19. Isaac Levitan *The Trunk of a Blossoming Oak Tree*, ca. 1883-1884, and *The Trunk of an Old Tree*, 1883. Note the similarity of the decision making in handling the value groups in the trunk between very different mediums capable of expressing very different values.





Fig. 20-21. Isaac Levitan *Savvinskaya Village*, 1884. The sketch has the same value relationships as the finished painting, but compressed into just two groups, with a third suggested by hatching.



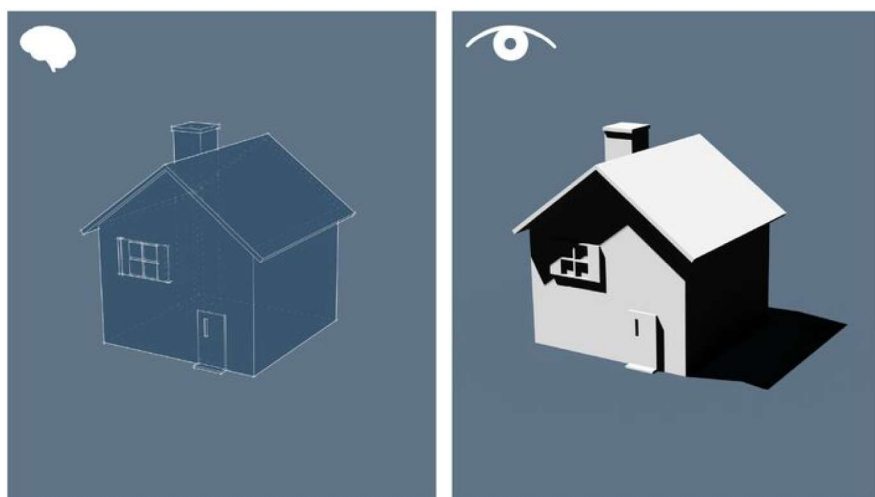
Fig. 22-23. Valentin Serov *Portrait of Princess Olga Orlova*, 1911. The relationships of the major shapes and contrasts between straight lines and curves of the pose, costume, and surroundings are worked out in the sketch.



# 03

## WHAT WE KNOW VS. WHAT WE SEE

In Volume 1 we explored the contrast between straight and curved lines and the feelings that those can convey. Another contrast in drawing, one that is just as fundamental, might not be as obvious: the relationship between what we see and what we know. It is the difference between the conceptual and the optical, or the 3D conception of the world vs. the flat 2D image that light forms on the retina, divorced from the brain's interpretation.



Our conception of the world is heavily based on our sense of touch. It is the reason why children draw the head and hands in an exaggerated size. As children we build a mental map of the world through exploring with our sense of touch by crawling, and the drawings are an expression of tactile sensation and the map that we build in our minds.<sup>1</sup> Let's take the example of the blueprint of a building. The intention with a drawing like this is to communicate as clearly as possible what we know about the world, and how exactly we want to affect it, not about what the eventual building would look like to our eyes if we were standing there. A fully rendered visualization showing off how the completed design will look may or may not use a more optical approach than a blueprint, it all depends on what intends to be communicated with the visual language.

There is a difference in the amount of information that we can take in when looking at a scene for one moment, compared to looking at different parts of a scene over time. When viewed only for a moment, information is lost, and an optical approach communicates that ephemeral moment in time.

Fig. 1-2. The image on the left shows a mental conception of the form, we can see through to understand how each line constructs the larger whole. This is a conceptual approach based on what we know. The image on the right is based more on how we would see the finished product, with information lost in areas that we aren't focusing on, such as the shadows. The conceptual approach excels at clearly communicating objective information, while the optical approach is good for showing one subjective viewpoint.

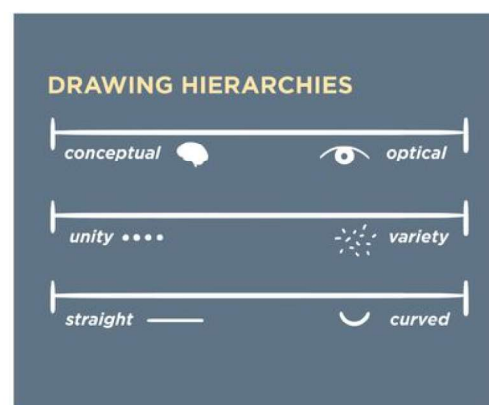


Fig. 3. The contrast between the conceptual and the optical is a fundamental hierarchy in drawing.

1. Speed, Harold. (1873). The Practice and Science of Drawing. (p. 44).



Fig. 4. Michelangelo *Studies for the Libyan Sybil*, 1511. Note the conceptual drawing ideas of the forearm as an egg form, and how it differs from the strong box-like form of the wrist.

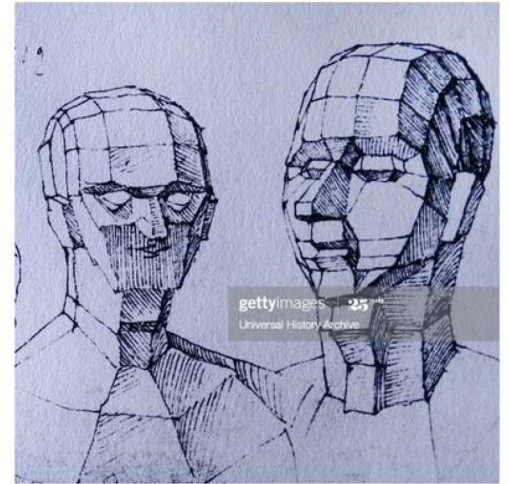


Fig. 5. Albrecht Dürer *Two Heads Divided into Facets*, ca. 1519. Dürer explored the conceptual, touch based approach by creating planar heads.



Fig. 6. Jean-Baptiste Greuze *Head of a Woman in a Nightcap*, 1772. Another conceptual approach, note the hatching across the form and exaggeration of reflected light.

If the artist making our architectural visualization wants to convey something more objective rather than subjective, then information not contained at a glance might be added to the scene, such as equal detail in both the shadows and the lights, and the ability to see through walls to clearly communicate the design. In this way, there are no rules in drawing, there are simply different tools to express different ideas. The drawing in figure 4 an example that is weighted towards the conceptual. It is constructed from the inside out, from a mental understanding of anatomy all the way to the subtle depiction of form



on the surface. The idea is not to communicate how we would literally see this figure with the patterns of light and shade, it is to use tools such as construction, hatching, and overlaps to communicate a mental idea about form. This was in sympathy with Michelangelo's goals in making a religious painting for the Sistine Chapel. The conceptual approach conveys permanence, a mental idea lasts forever and takes on more of these spiritual qualities, while an optical image is only a fleeting subjective moment.

Diego Velázquez was one of the first to pioneer an approach that is rooted more in the optical image. Notice how information is now lost in the shadows, and the abstract pattern of light and shade plays a much greater role. There is a very broad approach to modelling, and features are not symbolic, but rather arise out of the atmosphere. Form is still communicated, but from the outside in, by depicting the light. This is opposed to construction from the inside out, starting with what the artist knows about anatomy.



Fig. 7. Diego Velázquez *Juan de Pareja*, 1650.

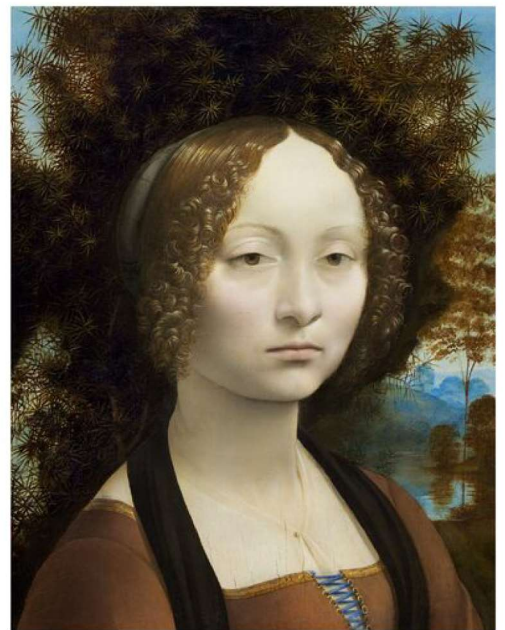


Fig. 8 (top). Diego Velázquez *Young Girl*, ca. 1640. A more optical approach, with emphasis on the abstract patterns made by light.

Fig. 9 (bottom) Leonardo Da Vinci *Portrait of Ginevra Benci*, ca. 1474-1478. Rather than broad abstract 2D patterns, the features and hair are conceived of as more symbolic ideas.



Fig. 10-11. Artist Unknown, Male Nude Sitting on Cubic Rocks, 1775, and André-Jean-Edouard Monchablon, *Figure dessinée d'après nature*, 1902. In the first example, the shadow side does not lose any information, compared to the right side where the outline is completely lost.



Fig. 12. Tahir Tanis *Hesperides*, 2014. In the cast shadow of the rock onto the stairs, we can feel the continuation of the form in the shadow and know that it is there, but we do not see it optically.

These contrasts exist on a spectrum and contain a proportion of both. Theoretically, a figure that is constructed taken far enough will have optical qualities, while a figure started from the outside in depicting the 2D shapes of the light first will eventually convey tactile qualities. Even in a painting purely based on the patterns of light and shade, our sense of touch is still activated as this is how we make sense of the world. In this example, we do not see the edge of this block in shadow, but we know it is there, and we can feel it.

This way of viewing art also has implications for how we study: constructive anatomy, linear perspective, 3D programs, they all use abstract mental conceptions that we employ to communicate ideas about the world. On the other hand, the massing of shadow shapes, the flow and balance of a composition, learning to draw the silhouette and shapes that we see accurately, are all based on communicating how we see the world. This is the other side of the same coin. However, they are still abstract tools since they are part of the visual language. For example, if we want to communicate the chaos of a hurricane, our composition can use chaotic lines, an abstract idea rooted in our sense of sight. It is helpful to first ask what we want to say with our art, and then see which tools would help us achieve that.

Painting from memory and imagination without the model can remind us that we are constructing a new world based on relationships, and not copying information in front of us. Artists would often work with their subject behind them, as seen in figures 16-17, and this setup would make it difficult to transcribe shapes side-by-side by flicking their eyes back and forth.

*"The conceptual approach conveys permanence, a mental idea lasts forever...while a visual image is only a moment in time."*

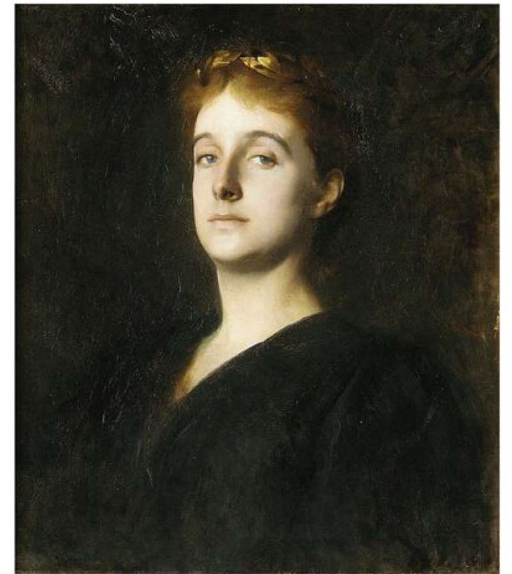


Fig. 13. John Singer Sargent *Portrait of Jean Joseph Marie Carries*, 1880. The conceptual and the optical are not mutually exclusive. A painting based more on 2D shape will contain touch-based appeal if carried far enough, and the mental conception informs 2D shape decisions.





Photos are a useful tool in that they are a pure representation of light and the flat 2D image. When working from photos, it is necessary to draw upon experience in painting from life to bring back information. In these examples from Peder Kroyer, it is easy to see how his experience in painting from life helped him use the reference as a tool to convey an established idea, the reference was used in service of the idea rather than the other way around.



Figs. 14-15. Peder Severin Krøyer *Anna Ancher and Marie Krøyer*, 1897. A photograph contains purely shape based information of a limited capacity. With experience painting from life, conceptual as well as optical information can be added.

Figs 16-17. While Sorolla used models, the amount of motion would be impossible to capture with the conditions on the beach if he were working purely optically.



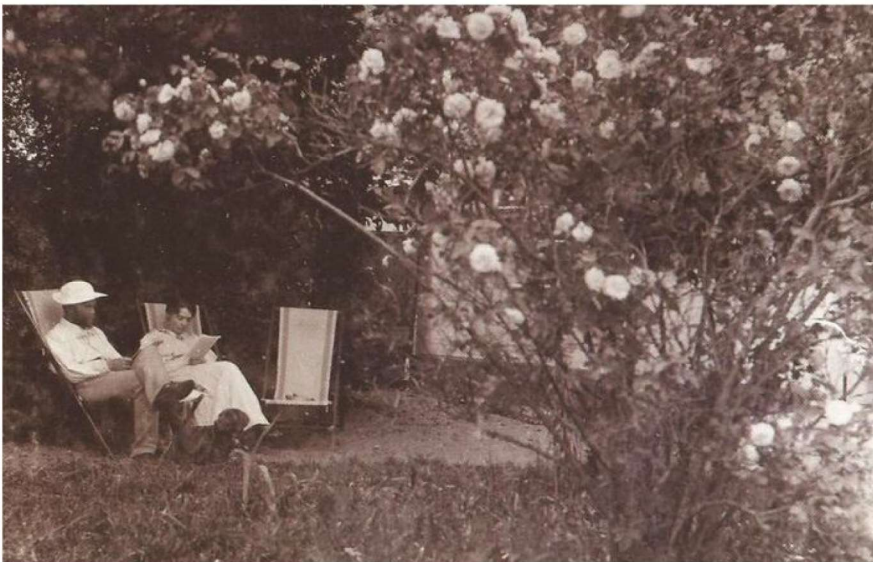




Fig. 18-19 (opposite), Peder Severin Krøyer *Roses*, 1893. Krøyer often used photography as reference, always in a way that supported the idea rather than dictating it.



Fig. 20-21 (above), Peder Severin Krøyer *Marie Krøyer*, 1891. Note how the compression of values differs between the photo and the painting. The skintone and wall are part of the same group and contain less contrast.





# 04

# POINT OF VIEW

First Person, Third Person, Omniscient. The perspective from which an idea is communicated is one of the first considerations in writing and is instrumental to how the story is interpreted. The same is true in painting.



Fig. 1. *Nany Offering Prayers, R.A., ca. 1050 BC.* The face is in profile, while the eye is seen from the front.

First, let's continue with the conceptual idea. We can see conceptual touch based concepts in the earliest drawings, much further back than even Michelangelo. Let's look at the art of ancient Egypt - the figures will have their face shown in profile, the view that is most characteristic to our sense of touch. When we imagine a face, we can feel the sloping curves of the profile and the silhouette clearly communicates this idea. However, the eye will always be shown in a front view. The < shape of the eye in profile is not very characteristic to us as a symbol of an eye, but the front view is exactly how we would imagine it. The implication of this is that we now must consider point of view. The figure is being viewed from multiple perspectives at once in order to see both the front view of the eye and the side view of the face, necessarily over a period of time greater than one moment. This conveys a feeling similar to what Michelangelo was doing, and both for the same reasons. Egyptian drawing had a religious purpose, and their ideas about the afterlife were perfectly in sympathy with the eternal feelings conveyed by drawing what we know about a subject rather than what we see.



Fig. 2 (above). Pablo Picasso *Portrait of Marie-Thérèse Walter, 1937.* The face is seen from profile, while the eye is seen from the front view, the same device as the ancient Egyptians thousands of years earlier.

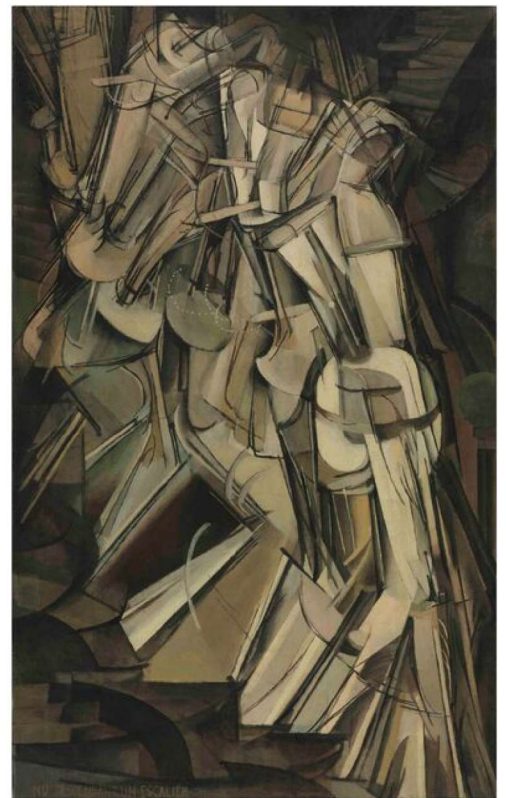


Fig. 3. Marcel Duchamp *Nude Descending a Staircase, No. 2, 1912.* A flat, visual depiction of a range of time, and not just one isolated moment.





Fig. 4. Diego Velázquez *Las Meninas*, 1656. As the court painter for Philip IV, Velázquez achieved a place of status which afforded him the time and ability to experiment with what painting could convey. *Las Meninas* depicts a familiarity between Velázquez and the royal family, and the consideration of every figure's viewpoint adds to the intimate tone of the painting.



Fig. 5. *Las Meninas* was painted late in his employ with the family, and the literal reflection of the King and Queen is in sympathy with the reflective, existential nature of the painting. We first see the expression of the Infanta in the foreground, a focal point because of the strong value contrast. She is making eye contact with us, the viewer, and we consider her viewpoint. We then see that Velázquez himself is peering out at us from behind his canvas, the very canvas that holds the finished painting. The mirror at the back wall reveals that we are actually viewing the scene from the perspective of the King and having our own portrait painted. The complexity of the consideration of point-of-view is unprecedented.

Point of view is an extremely important concept in writing, but is not discussed much in reference to painting, where it is equally important. Some common points of view in writing include the first person, first person with an unreliable narrator, third person limited, third person omniscient. These all carry a very different feeling, and work for different types of stories depending on the author's purpose. Point of view can be just as creative and varied in painting, and convey just as much information to the viewer even on a subconscious level.

Diego Velázquez was mentioned in the previous chapter as pioneering and experimenting with an optical approach. He also experimented with the limits of point of view in a 2D image. In his painting *Las Meninas*, we see ourselves as royalty being painted by Velázquez himself. It makes for an extremely psychologically complex image. You could say that the driving idea behind this image is about the ephemerality of life and a painting as a visual illusion, and the complex exploration of first person point of view of the King and Queen viewing themselves being painted is perfectly in sympathy with that idea.





As art history progressed, the intentions of artists changed with the times. Religious imagery became less of the driving force behind art, replaced by the subjective experiences of one point of view. Realism was now a major factor. By comparing the academic drawings from the 18th century vs. the 19th century this can be seen clearly, models were starting to look like real people and could be identified, and figures were being based less off of the greek "ideal." The subjective was being explored over the objective. Monet and the impressionists were making images attempting to communicate the pure optical, the image that light forms on the retina. Later, Picasso and other avant-garde artists would pioneer Cubism, and the depiction of multiple perspectives at once over a specific period of time. This was hailed as the cutting edge, but are actually ideas that the ancient Egyptians had explored 5,000 years earlier.

While each of these movements brought great controversy with it, in hindsight, we can see that the tools used by each artistic movement were uniquely suited to the ideas that they wanted to convey, and it is hard to say that one is objectively "better" than another.

The work of Lawrence Alma-Tadema is a great example of this and is in large part due to the unique intentions of his art. Alma-Tadema was a hugely popular Victorian painter who brought depictions of the ancient world to the contemporary Victorian people. It was easy to place yourself directly into his paintings and imagine that you were really there. As such, point of view was a primary consideration in his work. On the one hand, you had the mass-appeal of the modern self-insertion into the ancient world, and on the other you had an exploration of the fact that these were fantasies, and this was a history that had already happened. By including many actual museum pieces in his paintings, he introduced another layer of complexity that was no doubt very exciting to him as a student of history.

In figure 1, we can see an eclectic mix of the conceptual and the optical, as well as a consideration of point of view. The values feel true to how we would see the scene, with a full value range and lost edges, but there is also a strong appeal to the sense of touch in the specificity of the artifacts, architecture, and care put into the exact way the marble recedes in space. The high detail everywhere creates a static effect, and while the optical rendering makes us feel like we can enter the scene ourselves, there



Fig. 6-7. Lawrence Alma-Tadema *The Finding of Moses*, 1904. The even amount of detail and specificity across the entire scene, between both figures, objects, foreground, and background, suggests that this is not a subjective first person viewpoint, and not from one viewing of the scene. The flowers and foliage have a huge level of detail which would not be consistent with a one person's viewpoint at a single moment, which would most likely have a hierarchy of detail with the focal point highest in information. The focal point still has the highest degree of value contrast making the picture and narrative readable, but there is no significant lessening of specificity away from the focal point. We view the scene from a distance, from behind the foliage, like observers of history from the future.



Fig. 8. Claude Monet *Haystacks*, 1890. Monet was interested in capturing the purely optical image of light on the retina, making for a strong first person point of view.





is still an awareness that we are observers to history - a moment that has already happened.

In this painting, the observer effect is heightened by a few factors. Much like the last painting, there is an even amount of detail across the entire picture. Each column is treated as equally important as the figure's faces and hands. Every figure in the crowd is fully realized. Value contrast is again used to create a readable sense of depth, but abstraction of the drawing and lost edges are kept to a minimum, further accentuated by the stage-like frontal lighting that creates an outline at the edges of forms. An outline conveys the mental idea of the end of one object and the beginning of another. From a modern standpoint, we can also analyze the focal length of the "camera" used, and we can see that the sense of space is very compressed, something that much of Alma-Tadema's historical work has in common. It is as if we are viewing the scene from a telephoto camera from far away, like sports photography. This compressed space, as well as the lack of strong light and shade invites us to compare the figures in the procession to the relief sculpture that they are passing. As lively as the festival is, we can only experience it from the static marbles. He used these tools that are a part of the larger visual language to communicate this specific idea because they fit the feeling that he wanted to convey.

*"An outline conveys the mental idea of the end of one object and the beginning of another."*

However, Alma-Tadema did not only paint scenes of the ancient world. He depicted contemporary scenes, portraits of celebrities, and intimate portrayal of subjects close to him. In figure 13, a painting of his daughter, we can see a completely different approach compared to the last two paintings. The handling of values is now fully optical, much more like the earlier Velázquez. The flat, abstract, 2D shapes of shadows bleed into one another and edges are lost. There is significantly less detail in the room behind her, suggesting a depth of field and focus effect. Along with this, the focal length is much



Fig. 9-10. Lawrence Alma-Tadema *The Vintage Festival*, 1871. Figures are intentionally placed next to the sculpted relief to invite comparison.

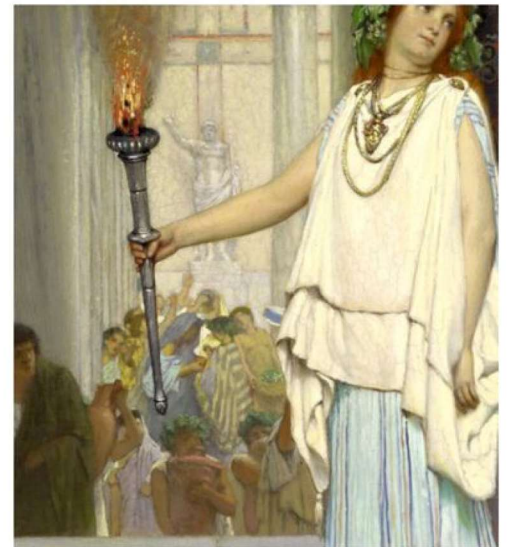
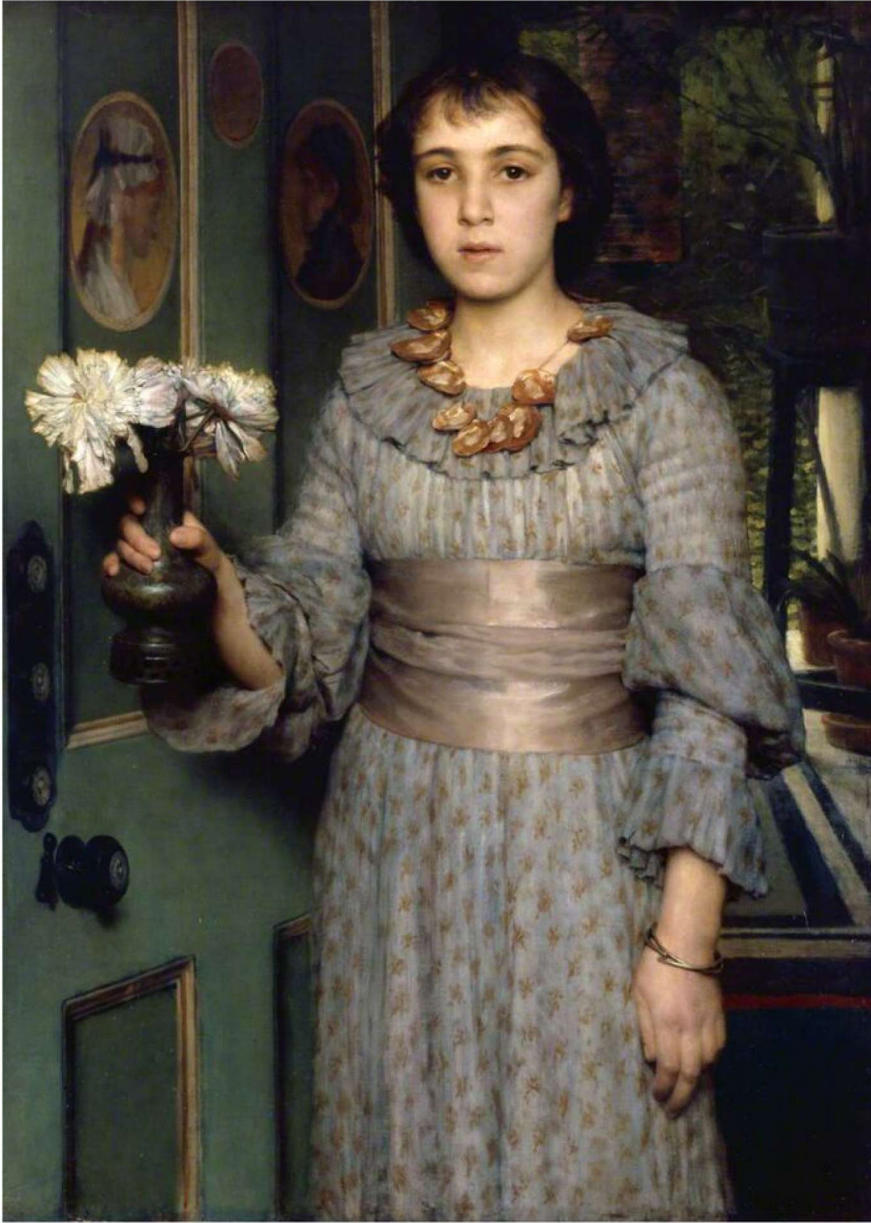


Fig. 11. Each figure in the crowd is fully realized with a low level of optical abstraction.





shorter, now closer to what the human eye would see, thus it feels like we are in the room with her. We get the sense that we are Alma-Tadema himself in his home, and there is not the feeling that this is a static unchanging moment, but rather a dynamic one that we happen to be catching a glimpse of. The use of all these tools adds up to familiar and personal painting, and the sense that this is one moment, from one perspective, frozen in time. It is tempting to think that Alma-Tadema used one approach for



Fig. 12 (above). Lawrence Alma-Tadema *Portrait of Ignacy Jan Paderewski*, 1891. A portrait of a contemporary musician.

Fig. 13 (opposite). Lawrence Alma-Tadema *Miss Anna Alma Tadema*, 1883. The more intimate contemporary scene is painted from a first person perspective, of one exposure, from a more optical perspective. Compared to the previous examples, these two paintings are more similar to the way Velázquez would paint.



his depictions of the ancient world, and one approach for his contemporary scenes. This painting of the biblical scene of the death of the Pharaoh's firstborn son is so interesting because it is from the ancient world, but painted in a manner much closer to how he painted the intimate portrait of his daughter in his own home. Why did he do this? It is again due to what he wanted to communicate, the core idea of this painting is now an emotional one. While the previous historical paintings had an emotional distance and an intellectual curiosity, here we come face to face with grief. Using tools that suggest detachment would be irreverent and would not support the emotional idea he wanted to convey. Faces are more characteristic and less idealized. Close values are lost and the forms are not outlined. Take a look at the lost edge of the boy's leg against the white fabric, and compare to the difference in handling in the Harvest Festival. In terms of point of view, it's now as if we are in the room with them. The focal length is shorter and there is a greater sense of soft focus outside the focal area. There are three bowing figures in the foreground, and it's easy to imagine that we are a fourth figure, viewing the evolving scene with our own senses.

In these last two examples, we can see the same exact subject, a woman smelling flowers, painted in two entirely different ways. The first painting, a model in his studio, is painted with a sensitivity rivalling Sargent, with soft and lost edges, an abstraction of drawing detail away from the focal point, and a naturalistic value structure where detail is lost outside of a certain range of exposure. The focal length is close to what the human eye would see, suggesting that this is Alma-Tadema's first person view. Note the softness of the tiger skin and paintings in the background, and how a strong hierarchy of edges is used to lead the eye back to the emotional core of the painting at the strongly accented flower shapes.

In this historical version of the same subject, almost all of these tools are reversed. There is a high amount of tactile interest, and there is no bias of detail in any one part of the picture. The complex pattern on the couch is as highly rendered as the same tiger skin from the previous painting, which is as highly rendered as the face and flowers. There is no personal bias towards any one area. This suggests a third person omniscient viewpoint, a detached camera with no sensitivity towards emotionally charged or human elements. If there is high focus and detail everywhere, then there is focus and detail nowhere.

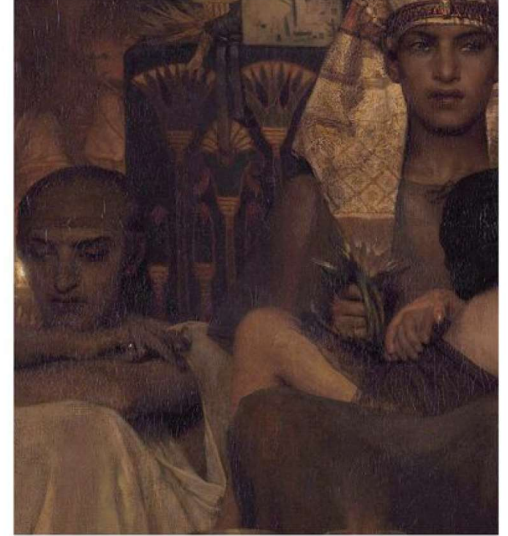


Fig. 14-15. Lawrence Alma-Tadema *Death of the Pharaoh's Firstborn Son*, 1872. Note the lost edge of the leg into the fabric, something that would not appear in Figure 9, *The Vintage Festival*.



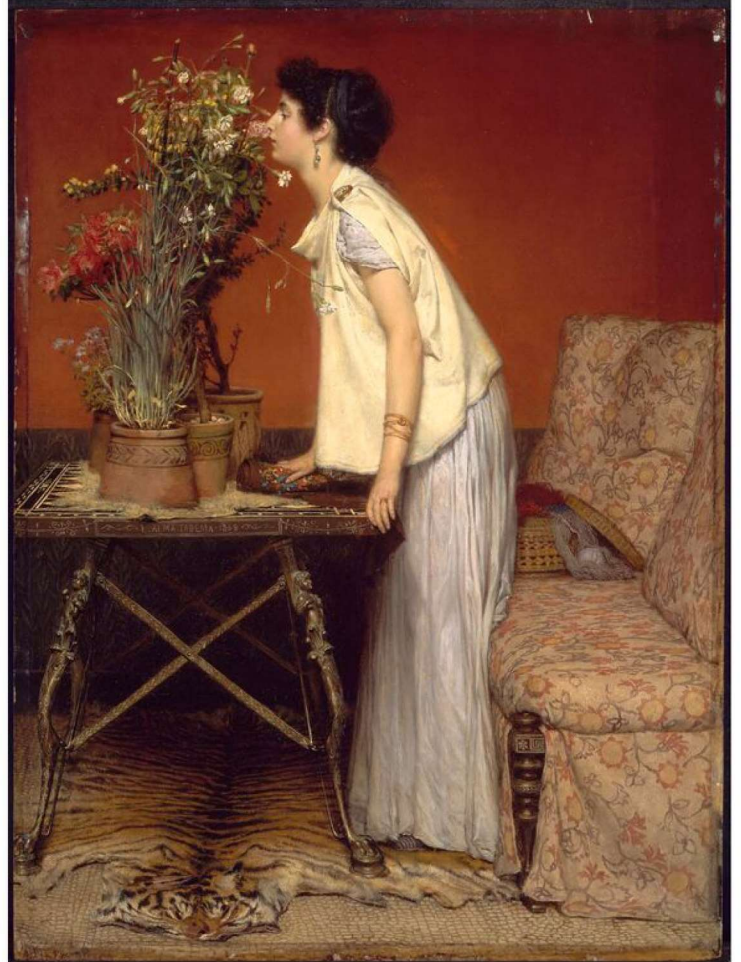


Fig. 16-17. Lawrence Alma-Tadema *In My Studio*, 1893, and *Woman and Flowers*, 1868. Note how the title of the first painting makes the first person point-of-view explicit.

The end result is a decorative one, we are not as drawn in emotionally, but we are free to appreciate the more intellectual aspects of the fashion, furniture, and architecture.

In this way, the same subject can convey two very different ideas just based on how it is said with the visual language. These Alma-Tadema examples show that he was capable of painting in a variety of ways, and chose the manner he needed depending on what each specific painting called for. No grammatical tool is superior to another, they are just differently suited to certain effects. The more we experiment and explore these tools, the greater the range and complexity of ideas we can express with the language.

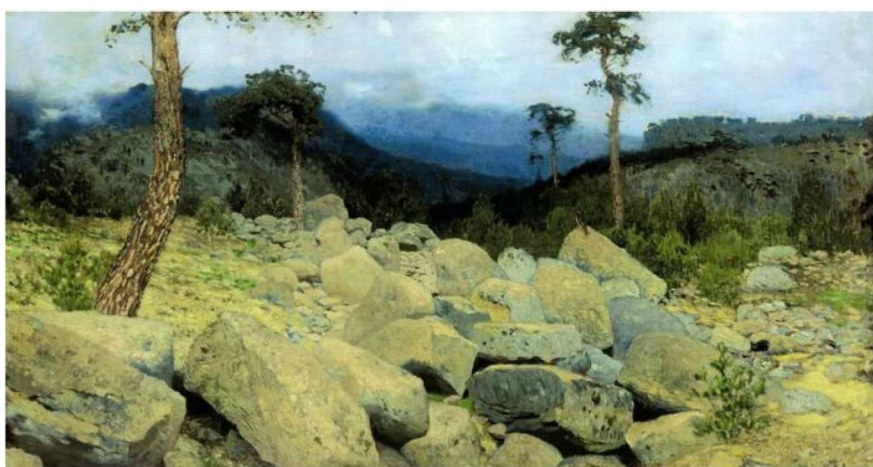
*“The more we experiment and explore these tools, the greater the range and complexity of ideas we can express with the language.”*



## 05

# THE MAGIC VALUE

Working comparatively is very important while painting, but what does this actually mean? What are practical steps we can take to make sure we are working accurately and comparatively? When we do so, information naturally groups itself.



When I first started painting, I knew only one type of composition, and every idea that I had had to conform to the only process I knew. Dark foreground, a little bit lighter for the background, and the sky being the brightest of all. It was like a stage decoration made of flat cardboard. It is a very approachable process which makes it attractive, but I would see paintings that didn't conform to this paradigm and I'd be left confused and feeling like I was not painting the right way. To show depth, I thought, you must carefully blend between these foreground and background values. When I saw this Levitan painting with the darkest values miles in the distance, I was baffled. The realization that I had led me to question other concepts that I took for granted: dark values don't always come forward, cool temperatures don't automatically recede. It is simply about contrast. The foreground has a lot of value contrast between groups, so it comes forward. The background has very little, despite the very dark value.

Since all of painting is based around controlling contrast, and contrast is the difference between two things, then comparison is the way in which we can confidently control that contrast and create accurate, compressed hierarchies. When working absolutely, say copying values, colors, edges and drawing without comparison, we are not reconstructing a world, are confined to the information we have in front of us, and risk having our hierarchies not relate to a consistent reference point.

We often can not literally copy the values that we see with our eyes. White paint or a backlit computer screen will never be as bright as the sun. Compressing this information can be a natural part of our process, becoming second nature when we compare across the entire scene.



Fig. 1. (above) The "concept art composition." Values proceed from dark in the foreground to light in the background in discrete steps. It can be useful in certain situations, but conventions such as this are often limiting to the ideas that we can express. If we only have one tool, every idea must conform to it.

Fig. 2 (opposite) Isaac Levitan *In the Crimean Mountains*, 1889. The language of painting works based on contrast, contrast is relationships, drawing controls those relationships, and compression organizes them into simple groups that we can design with.

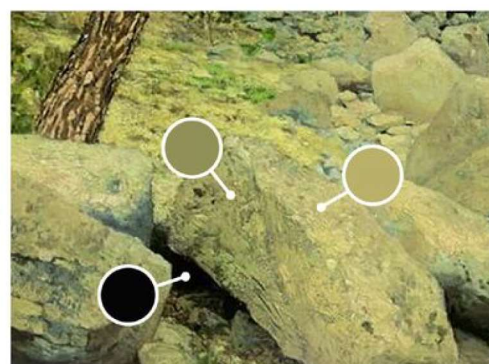
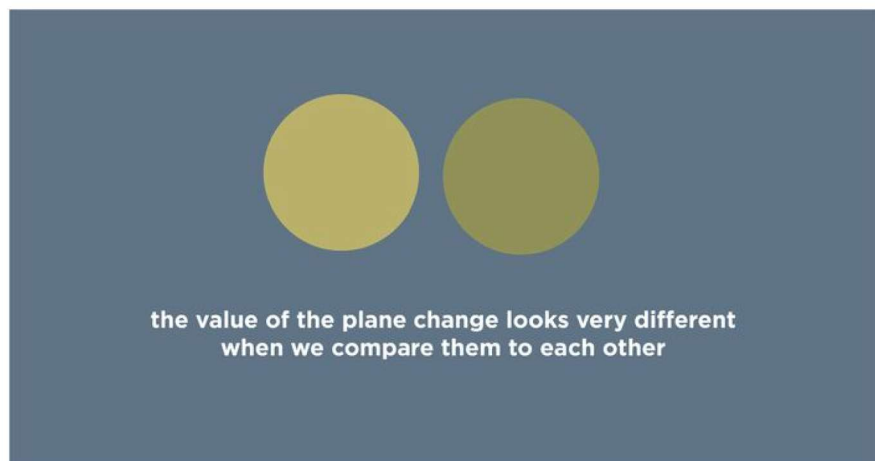
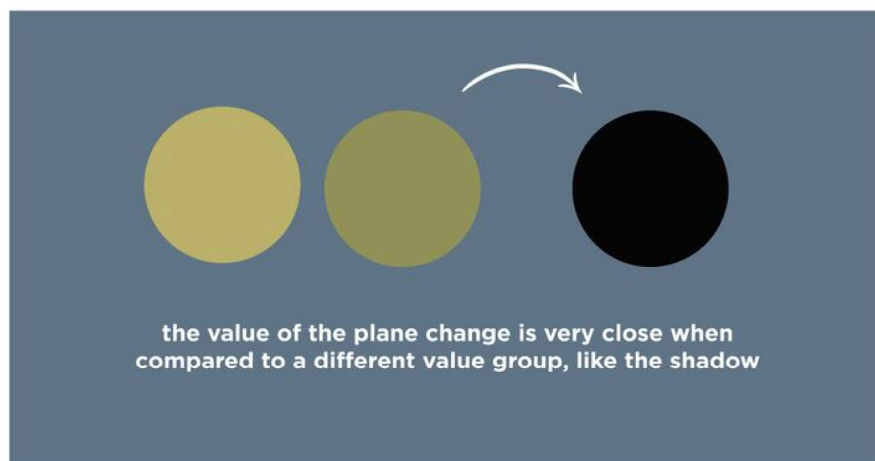


Fig. 3. The plane change in the rocks is something we know about the form. Since a value change most often represents a plane change, we can expect a difference in value between them. When we compare those values directly, we can easily overstate them, but when compared to a very different value group like the shadow, we can see that they are very similar. When comparing across an entire scene, small differences of value compress into groups.





Our brains are great at looking for contrast. We are so adept at seeing differences, that if we are looking locally, as in comparing the value differences in one small area, then we are liable to think the difference is greater than it actually is. The key to compression then is finding the big relationships of a scene.



When comparing two things, the first step is to select a reference point, also known as *the magic value*. All of the elements of painting have hierarchies that work through comparison, and a reference point of value can also help us make edge and color decisions. By placing a piece of information that we know is correct, we can compare all subsequent decisions to that. By keeping reference point consistent, we can be confident that each decision we make is building upon a solid foundation.

How do we find this point? Look for where two different objects share the same value, also known as a lost edge. Because we know for a fact that these two different objects share the same value, we can confidently place that value, and then compare our next decision to that. It is especially useful for this point to be a value that is neither too dark or too light. Depending on the exposure, that could either be in the light or the shadow.

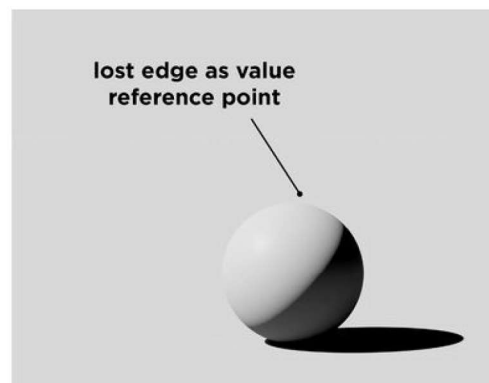


Fig. 4 (above). Lost edges, or where there is the same value between two different objects, are useful for finding a point of reference to compare all of our values to.

Fig. 5 (opposite). Local judgments overstate contrast.

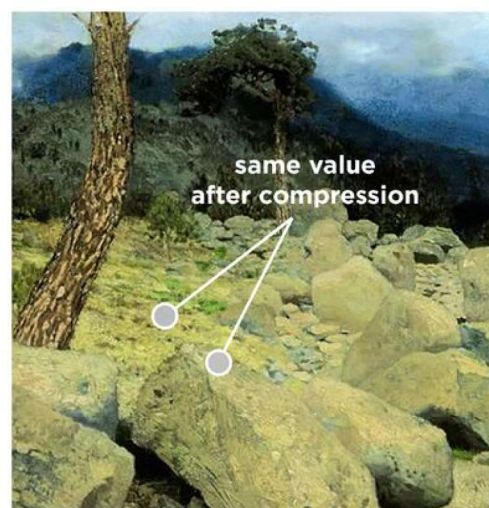


Fig. 6 (above). The natural consequence of comparison is compression, and we can break down complex information into simple, controllable elements of painting in order to design, interpret what we see, and communicate a visual idea. Similar things become more similar, and different things become more different. When working locally or absolutely, contrasts are overstated and it is easy to miss the big picture.

Fig. 7 (opposite). When comparing contrast to very different groups, information naturally compresses.



Fig. 8 (opposite). Abram Arkhipov *Beggars*, 1862-1930. The value of the wall, hat, and shirt are all in the same compressed group, and by comparing between them, and to different groups like the shadows, we can keep the level of contrast within them accurate. When working comparatively the overall contrast of the image is more controlled, and darks and lights can avoid being overstated. A common beginner mistake would be to make the hat too bright compared to the wall.

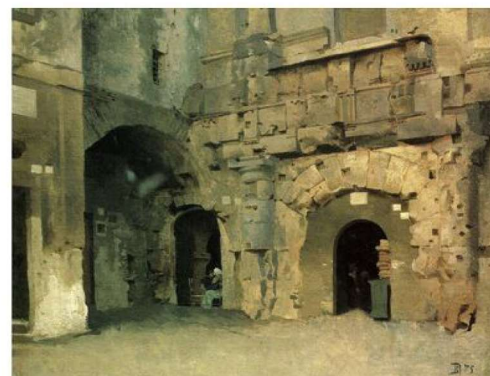


Fig. 9. Vasily Polenov *Cityscape*, 1875. Squint and look for the middle value reference point. If we had a piece of toned paper the same as this middle value, we could go darker for the shadows, and lighter for the white walls. By focusing on the differences between those groups, rather than the detail within them, we can keep our decisions broad and accurate.



Fig. 10. Isaac Levitan *Wassylsursk*, 1887. The trees in the foreground as well as the ones miles in the distance have the same value group due to a lack of atmosphere. Rather than value differences, drawing does the work to show distance instead.

Because this is not absolute, we could even change the value of the reference point to be something that works well with our medium. If the values of the two objects are the same, it doesn't matter exactly what value it is, the relationship will be correct, and it will be easy to go either light or darker from there. By staying somewhere in the middle, and keeping the limits of our medium in mind, we know that we can either go up or down from this point without unintentionally clipping the information, or running out of room to express it. In addition to value, by keeping shape and color information somewhere in the middle, we have room to go before reaching the extremes of our perception. The depiction of accurate relationships becomes the most important consideration. It's not about capturing detail in a vacuum, it's about showing accurate differences and similarities. Try looking at paintings at thumbnail size, and appreciate the abstract shapes that they make. We are not literally representing objects, we are controlling elements of a language to communicate ideas about that object. Just like poetry and music, we can get to a deeper exploration of a subject by manipulating simple elements of a defined language.





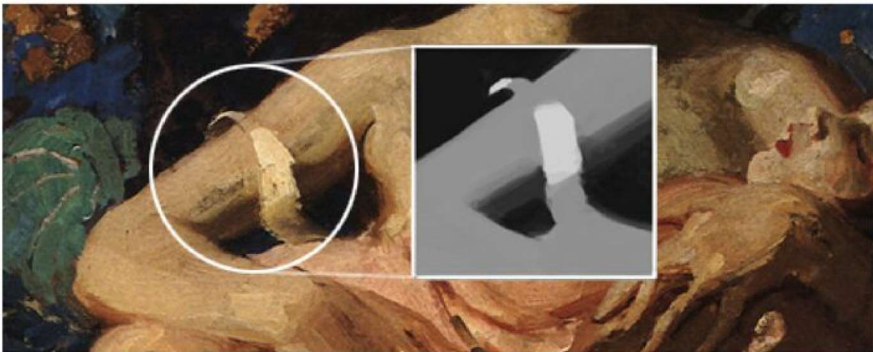
Fig. 11. Bernie Fuchs *The Bride*, ca. 1960s. Differences in values are minimized, allowing the value of the paper to be grouped with the rest of the midtones. This works well for an editorial layout.



Fig. 12. Giacomo Favretto *After the Bath*, 1884. Squint and see the value of the figure group together with the wall, and how the painting naturally groups into four values. While squinting when painting from life, use it to compare across very different groups, not to copy the scene as you see it while squinting.



Fig. 13. The accuracy of drawing can also be thought of in this way. By comparing and creating a scaffolding of large relationships of angles, an optical accuracy can be obtained. One specific technique to see how relationships of angles relate is to use a plumb line, a reference point for angle relationships. With the dotted vertical plumb line drawn first, we can start at the ear, then find the angle of the line 2 to find the bottom of the foot. Then the elbow can be found with angle 3. Notice how angle 1 is parallel with the bottom of the nose; this is a relationship that we know needs to exist. By extending out our lines further, we can add further horizontals and verticals to find other salient points. Triangles can also be reflected over the plumb line to find distances on the other side, but by having the reference point of the vertical and horizontal all of our subsequent judgments will be correct.



Figs. 14-15. Dean Cornwell *Illustration for The Glass Cage*, ca. 1920s. Dean Cornwell is a good artist to study because we can see his decision making. Look how the value of the dark blue cloth is the same in light as the white dress is in shadow. These are the big relationships to look for, and then naturally the small differences group themselves. Note how the values in the sleeve alternate between established groups. Those established groups come from comparison, and then we can design with them.



Fig. 16. Look at the reference very small, and group all of the important information.

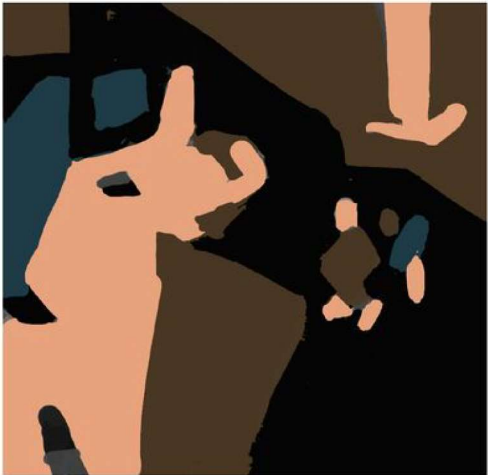


Fig. 17. Next, add temperature information opaquely on top in order to gain an awareness of the relationship between color and value, explored further in chapter 7.





Fig. 18. Dean Cornwell *Cosmopolitan Magazine Story Illustration*, 1922. Note how the top right passage is compressed into simple value groups, and how the alternating pattern is an abstract design.



Figs. 19-20. Temperature information can exist as a layer on top of accurate value grouping. The values have established a range of possible colors and temperatures.



Fig. 21-22. Walter Everett *Children with Nuns*, 1880-1946. Even in seemingly complicated paintings, we can look at the painting very small and see that there are still only a few value groups. The shapes themselves are just smaller and change between groups more quickly.

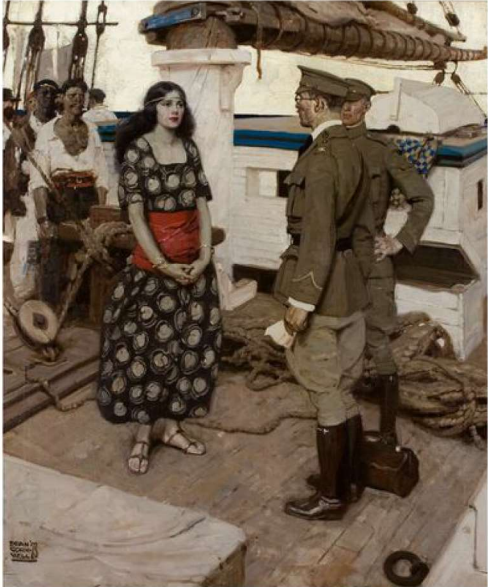


Fig. 23. Dean Cornwell *Never the Twain Shall Meet*, *Cosmopolitan Illustration*, 1923. Note how the value group of the pants and the deck are the same.



Fig. 24. Dean Cornwell *Romantic Couple Seated by Piano*, *Hearst's International Magazine Illustration*, 1922. Here, the value boundary between the pianist's back and the wall is a lost edge.



## 06

THE  
MATRIX CODE

Contrast is how painting, poetry, dance, and other artforms communicate an emotional idea to us. Because it is independent of medium, it can even be thought of purely in the abstract. Each hierarchy could even be represented by numbers, showing the degree of contrast within and between groups.



Fig. 1. Joaquin Sorolla *El Pescador*, 1904. In Volume 1, the concept of exposure was introduced. Here, there is a high degree of information in both the light and the shadow. How can we achieve this and keep our value structure coherent?

A song can be thought of as simultaneous hierarchies of contrast over time. One melody goes up, while another goes down, and we find the contrast pleasing and interesting. At the same time, a rhythm section plays in between the beats of the melody. Multiple forms of contrast happening at once, over the time it takes to listen to a song. When all of these hierarchies are experienced together, there is a simultaneous harmony, like the instruments in a symphony playing different things, but adding up a larger whole. Painting works a bit differently: when we walk into a museum and see a striking painting, these simultaneous harmonies are experienced all at once, but now over a range of flat 2D space. It is the same exploration of contrast, but through a different medium.

When we use the compression that results from working comparatively, we can have simple groups of elements that can be used to compose. Before exploring these concepts in groups of 3 or 4, let's first look at how they work with a very compressed statement of just two.

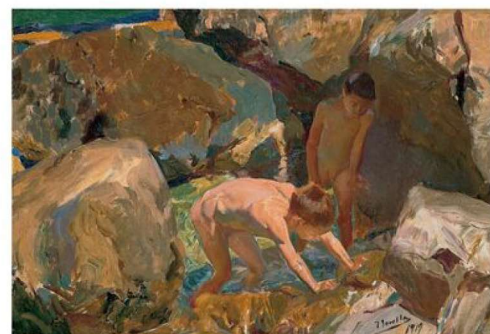


Fig. 2. Joaquin Sorolla *Children Looking for Shellfish*, 1919. How do we show information in both the light and the shadow? By controlling the amount of contrast that we have in our hierarchies, we can decide on the range of information we can express before the information clips, or exceeds the range of the relationships we can show with our medium. This example has a lot of information in every value group, so the overall contrast of the image must be reduced to show it, often forgoing a more graphic read.

We now have only **0**, representing black or **1**, representing white. It is a binary expression, and it can be very simple to see the way that contrast works using only two groups. . Let's use the frequency of detail as an example.

With an even distribution of light and dark, we get a balanced and restful feeling from the composition. Any area of increased frequency of detail will stand out and become a focal point, such as the figure on the right side. Still, overall, the feeling from this distrubution is balanced.



Fig. 3. Tahir Tanis *Hesperides*, 2015. An overall restful, balanced feeling, with a focal point of increased contrast of frequency of shape.

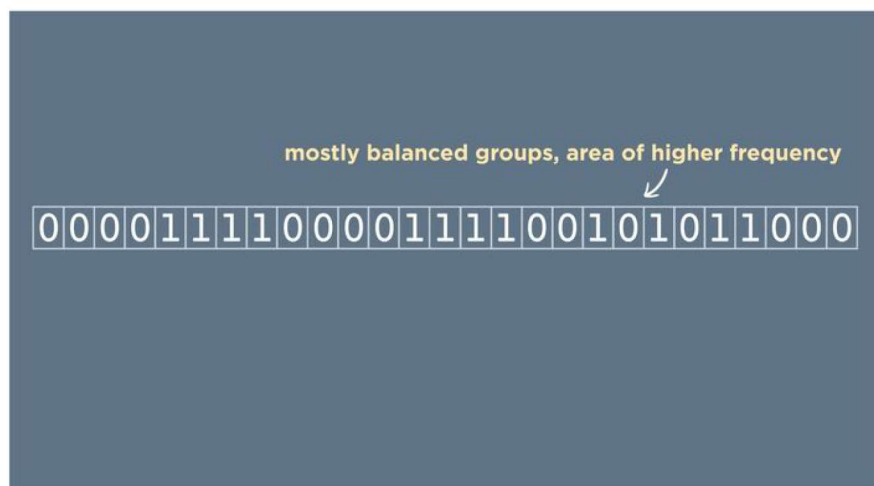


Fig. 4. Range of expressable information from 0 to 1.



Now, we have primarily a large area of rest, and a strong area of activity on the left side. The high frequency activity becomes the focal point. The feeling is one of overall greater intensity than before. There is still balance, yet it is more dynamic due to the greater difference between groups.



Fig. 5. Lin Ran, ca. 2010s. A greater difference between groups leads to a less restful feeling. A composition with primarily unity, with a contrast of variety on the left side of the canvas.

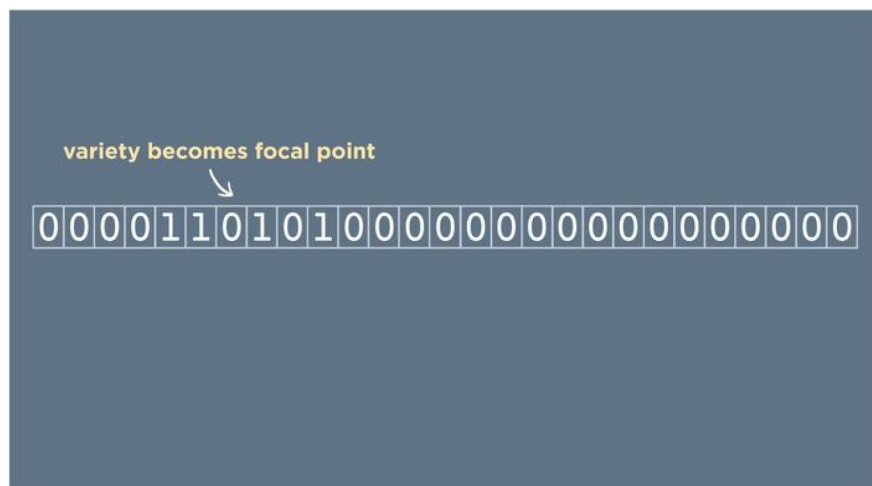


Fig. 6. Range of expressable information from 0 to 1.



Fig. 7. Lin Ran, ca. 2010s. Our complexity value can be "keyed" to any point. Here our base complexity value is higher, so the focal point of the face needs to be extremely high frequency in order to read as a focal point.

With primarily areas of high frequency activity, punctuated by an area of rest, the rest becomes the focal point. This has a similar feeling to the previous example, balanced yet dynamic.

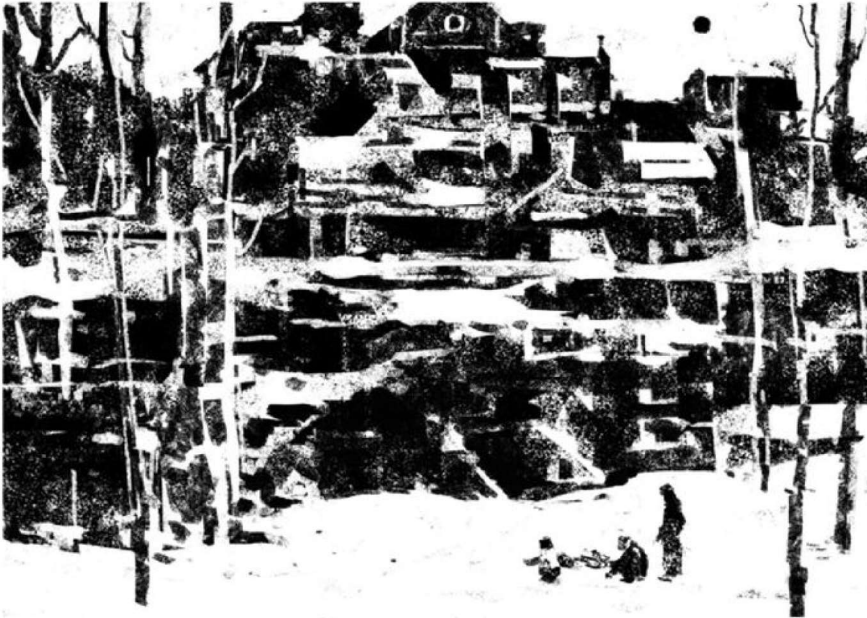


Fig. 8. Lin Ran, ca. 2010s. A composition with primarily variety, with a contrast of unity at the bottom of the canvas.

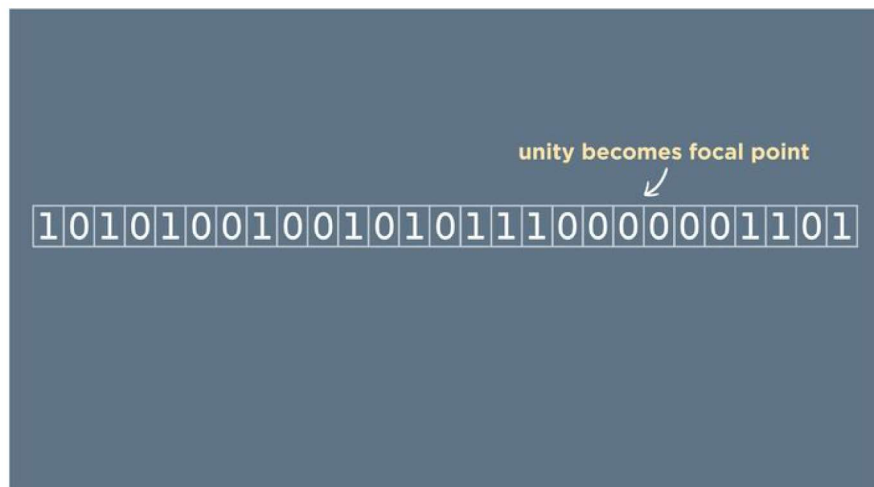
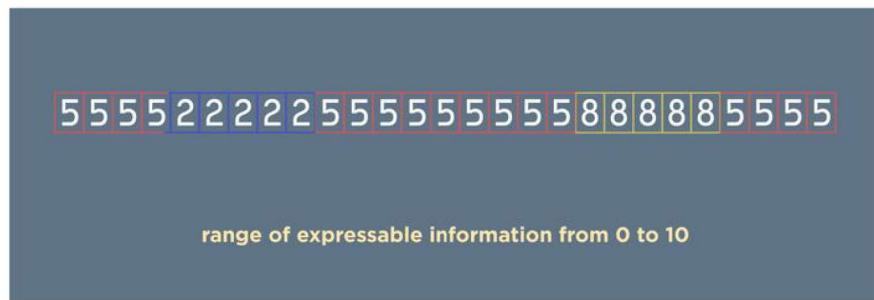


Fig. 9. Range of expressible information from 0 to 1.

In this way, activity is not any more of an inherent focal point than rest. Our eye is drawn to differences and contrast, and it is possible to be very creative with what those contrasts are and how they are used. It is an open ended question, but with defined parameters. These examples use value groups and concentration of detail, but each element of painting has its own numerical scale happening at once, and these simultaneous contrasts are what we find so appealing in successful work. As we uncompress and have more groups to work with, the same principles will apply.



Let's look at this Levitan painting again and find the magic value. If we zoom out, we can see that the rocks and grass appear to blend into one mass. There is a difference in color, but this can be added later. If our medium can express a range of information between **0** and **10**, let's say that our reference point is a **5**. This is to be expressed over a range of 2D space, so it can be shown as a string of **5s**.



Our darks are a much different value, so those can be added as **2s**. Our lights are very different than both of those, so those can be added as **8s**. We can add information within each group, but not so much that they start to get too similar. Since in reality these values are very different, we have to control how far apart these groups are. You can see abstractly how close the values need to be in order to not have the groups start to compete.



If we add contrast to one group, and it starts to get too close to another, we can raise or lower that other group, knowing that it may start to *clip*, or go beyond the **0** to **10** range that we can express.

The amount of contrast within and between groups is a very important consideration. We can also reduce the contrast within each group, and that way we can have the difference between them be closer, and this leaves us with more room for other groups. We have spent less of our contrast "budget." In music, if a song is mixed overall to be lower in volume, a greater amount of dynamic range can be heard where needed. A subtle range of information within groups and closer differences between groups leads to a lower contrast overall image, but one capable of expressing more information.

In this way, controlling contrast is actually very similar to how music is mixed. Each instrument needs to sit within its own range, and if the vocals have too much bass, or the bass has too much treble, they will start to interfere and a muddy effect is the result. The term *mud* is used for the same phenomenon in both music and painting. If you have too much light in your dark value group, and too much dark in your light, the same muddy result is achieved.

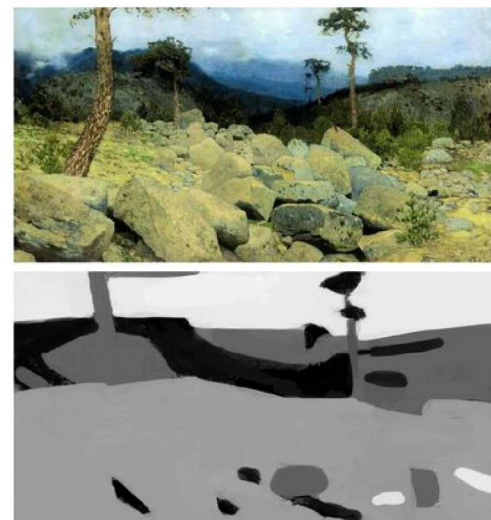


Fig. 10 (above). The compressed version has 4 groups, and note how the group closest to the foreground contains the most number of other groups. For readability, the numerical version only contains 3 groups.

Fig. 11-12 (across). After the first consideration of knowing what range of information you can express with your medium, for example a value scale, groups can be organized within those limits. More contrast can be added to each group, but not so much that the groups start to compete.



Fig. 13. Joaquín Sorolla *Niños en la Playa*, 1916. Both the light and shadow contain information, but the contrast within groups is carefully controlled.

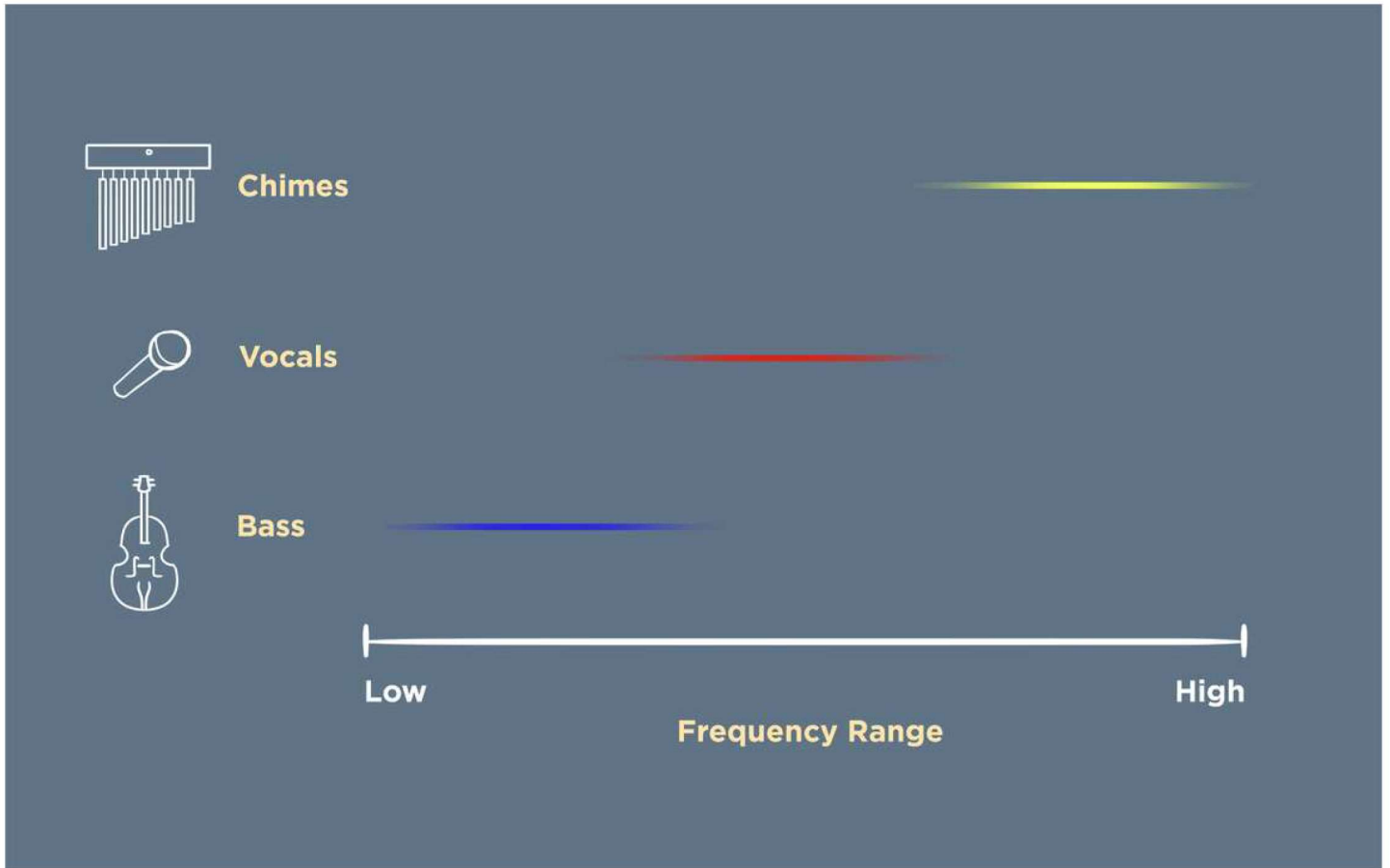


Fig. 14. Each instrument sits within its own frequency range, not encroaching on another. When too much of one frequency is in another group, we experience it as "muddy." Compression and grouping works the same way in painting.



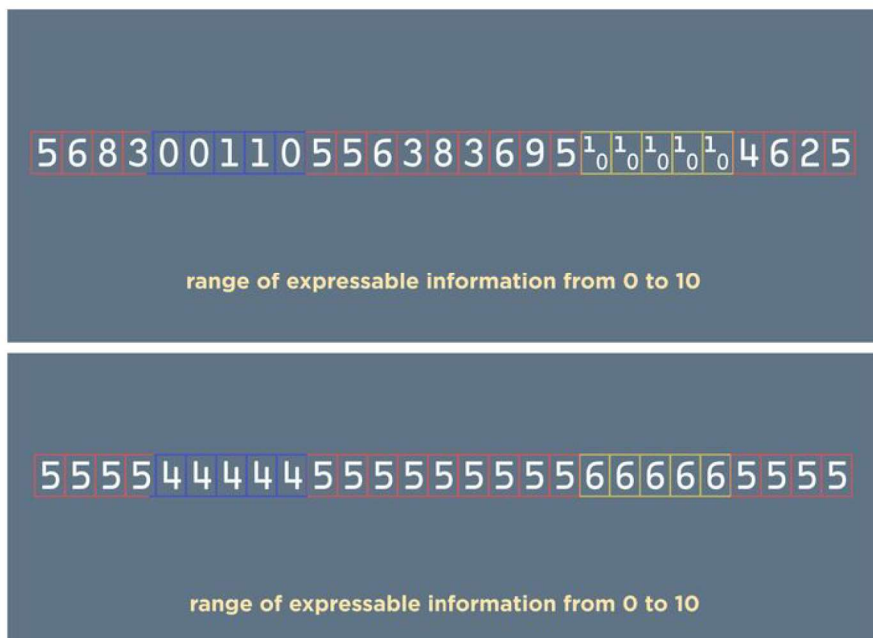


Fig. 15-16. The middle group has a wide range of information, all the way from 2-9. This means that the other groups need to be much further away, and since the medium can only show from 0-10, information is clipped. The same accurate relationships can be shown by reducing information within groups, and reducing the range between them. This frees up 1-3 and 7-10 for other groups.

Figure 6 is a numerical representation of what is happening in figure 9. There is a large and intentional difference between plane changes, therefore the shadows have to be kept flat and unified, and we can't show the difference between the cast shadows and reflected light.

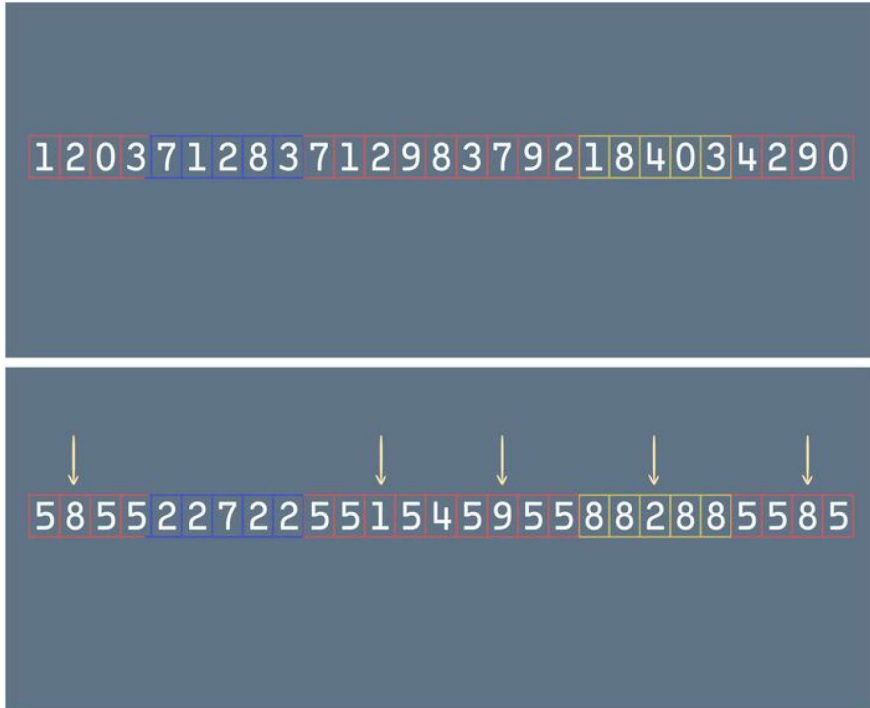
In figure 7, the contrast within groups is reduced, and you can even see that the plane of the forehead is merged in value with the background. This allows us to show the differences in value in planes in the shadow, and add another separate group for the cast shadow, because we conserved our budget.

The number one beginner mistake is unintentionally placing too much contrast between each plane. If plane changes are overstated, then it greatly reduces the overall amount of information we can express. A value change is most often a plane change, unless it is describing the falloff of a light source weaker than the sun. Falloff is often overstated to the point that it becomes confused for plane changes, and it is very hard to compare accurately when painting falloff directly. If we are changing values, or even temperature, color, or changes in angle, we should have a good reason for doing so, otherwise we could unintentionally be limiting the amount of information that we can show by spending our contrast budget.

If we are increasing contrast intentionally, and the the planes of the face are intentionally overstated, then the shadows are clipped to a flat value and can easily be used as a compositional element. The resulting contrast between the wide range of information in the lights and the lack of information in the shadows is an appealing form of contrast itself. If we wanted to show reflected lights in the shadow, then the range of contrast in the lights would either need to be reduced, or raised in value and possibly start clipping itself. In many paintings exposed for the shadow, the clipped light shapes are used as contrasting compositional elements rather than the shadow.



Fig. 17-18. With a lot of contrast within one group, another may need to be raised or lowered beyond the range expressable by the medium. For example, the shadow information in the top example is clipping. With lower contrast between and within groups, more information within more value groups can be shown.



In terms of process, the matrix code can be useful in determining how to proceed. For example, if we work with flat opaque brushstrokes without a lot of texture, then the process will involve groups without a lot of information within them, and then that variation can be carefully added, making sure not to have the same number in two groups. If we start a painting with a lot of texture and variation, or combine photos together for an interesting ground, then we have to organize that wide range of information into controlled groups.

We learned that drawing is the foundation of any painting, and if there is too much overall contrast in an image, then the shapes of that drawing can not be easily determined. This can, of course, be used intentionally, but it is often done unintentionally. You can see that if the shapes that make up this face are very low contrast, they still read. But if both the internal information of the shapes and the background have a lot of contrast, it becomes very difficult to make sense of the image.

By thinking of painting in this way, we can always keep the underlying abstract language in mind, and the fact that we are in charge of the way that we use it.

*“The more we experiment and explore these tools, the greater the range and complexity of ideas we can express with the language.”*

Fig. 19-20 (across). When starting with a base of high contrast texture of photo bashing, it is then necessary to organize the existing information into groups. On the other hand, if we have an image with very controlled groups, and then we paste in a photo, it is then necessary to find the contrast that doesn't belong.



Fig. 21-22. With low contrast between groups, shapes are easily able to read, and subtle accurate differences will read. With lots of contrast everywhere, shape decisions and subtle accurate relationships, will never be readable.



## 07

# COLOR, TEMPERATURE, & CHROMA

What actually is color, and how do we use it? How do we know how to confidently decide on colors in the infinite lighting situations that we can imagine? In this chapter, we will dive deeper into how light works, what determines the color we actually see when light reaches our eyes, and how color relates to value.



Let's start at the beginning with the basics. First, color is a 3D space that you could imagine yourself walking around in. We know this because there are 3 variables. If we plot only 2 of them, for example value and saturation, we can easily see that this is 2D.

Fig. 1. John Singer Sargent *Muddy Alligators*, 1917. In this chapter we will explore how to confidently have brilliant colors in our paintings while being aware of color's place in the hierarchy of all the elements of painting.

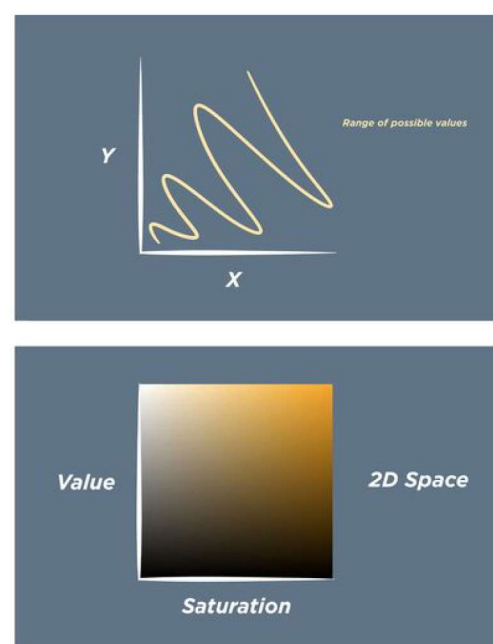


Fig. 2-3. The 2D color space. Plotting X against Y gives a range of possible values. With X as Saturation and Y as Value, we have a possible range of colors in 2D space.

This 2D space is familiar to us, we see it in the Photoshop/Procreate color picker. Once we add a third variable, hue, we have depth to our graph. Value is the amount of light, saturation is the purity of the light, and hue is the wavelength of the light (more on this later).

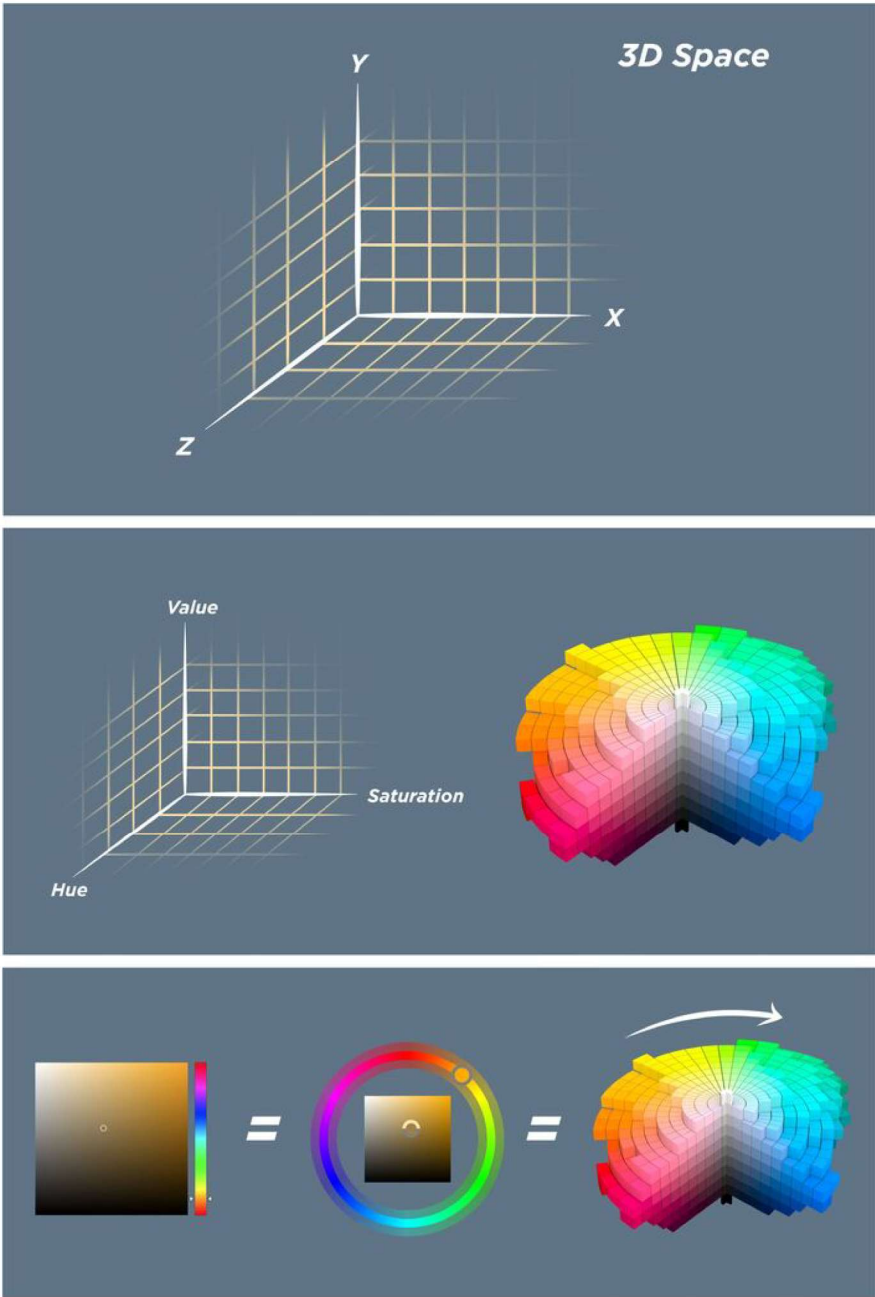


Fig. 4 (across). The 3D color space. Up is value, across is saturation, around is hue. The various incarnations of the color picker are a way to explore 3D color space. The hue wheel or strip changes the Z axis in 3D space. In this 3D space, hue loops around the outside. In Photoshop, hue is laid out as a strip, but it could be thought of as a continuous color wheel. When we change just value and saturation we are exploring a flat 2D plane, and when we move the hue we are moving through 3D space.

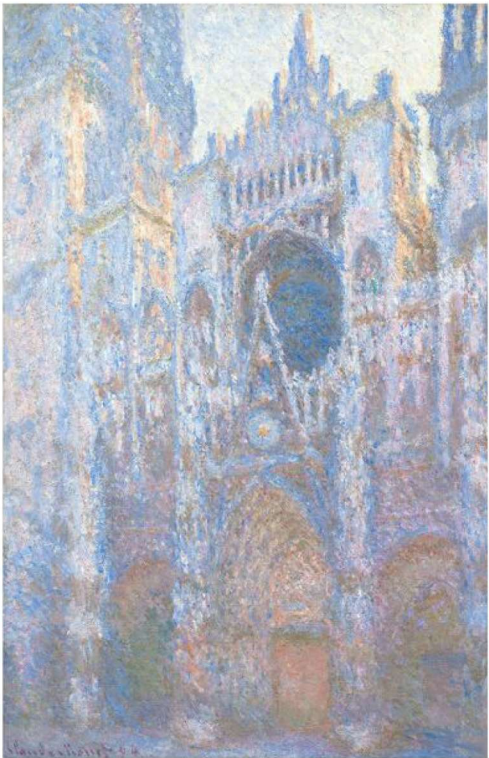


Fig. 5 (above). Claude Monet *Rouen Cathedral, West Façade*, 1894. When working in full color, from the top of the pyramid, decisions about edges, color, and drawing are also decided.



By lowering saturation, we are actually adding in the opposite, or complement, of the color. If we add blue to a pure yellow, it desaturates and passes through the land of grey, and then comes out the other side of the color world until eventually we get to a pure blue.

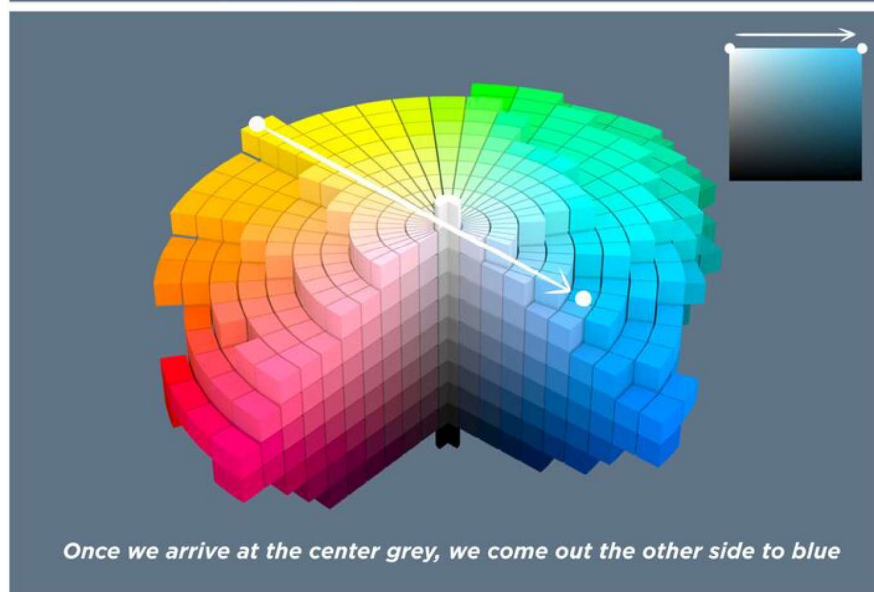


Fig. 6. If we start at a very saturated yellow, and lower the saturation all the way to grey, we are adding the opposite color. We can then increase the saturation of that opposite color, starting at the same grey, and arrive at the other side of the color space.

By desaturating blue, we are adding yellow, and thus making it warmer. This is why a greyer version of yellow is cooler, even though it is still technically a yellow hue. Temperature is relative, so we are comparing two colors to each other.

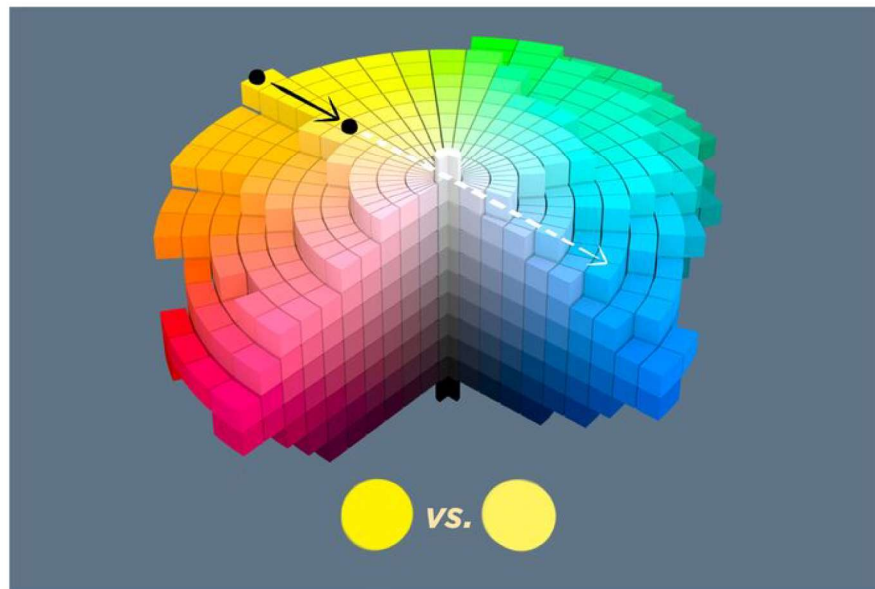


Fig. 7. Temperature is comparative. As we desaturate yellow, it becomes cooler, because we are adding blue.

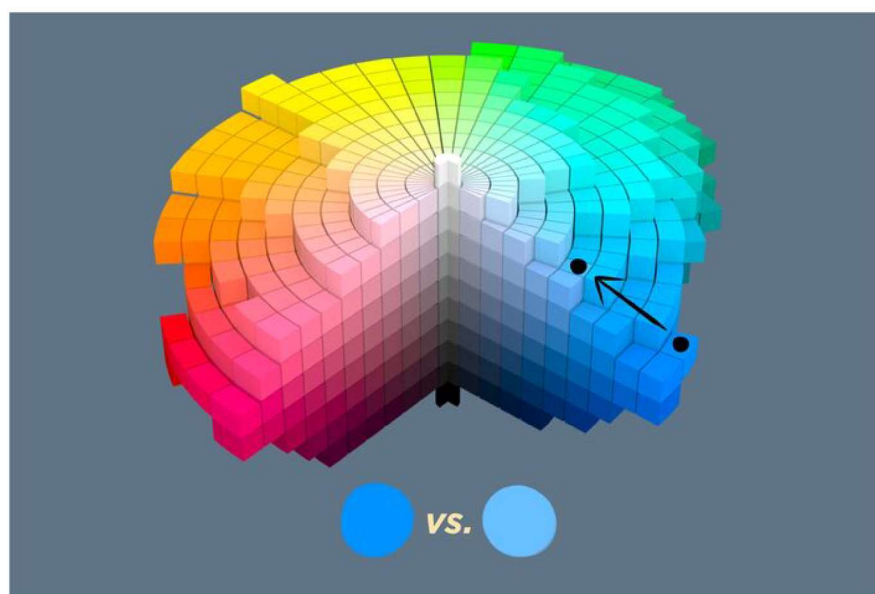


Fig. 8. By the same principle, if we desaturate blue, we are adding the opposite yellow, thus making it warmer.



If we have a yellow object reflecting red light, we can walk around the edge of the world instead of going through the center. Instead, we could shift the hue and move through the oranges. It might even desaturate a bit because it is losing purity from the light mixing and the incomplete reflection.

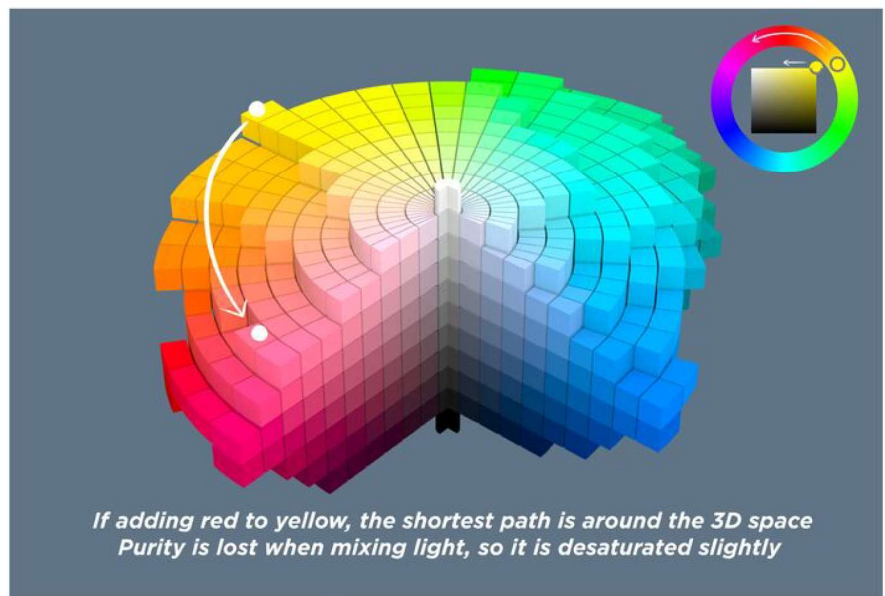


Fig. 9. Mlxing light often causes hue shifting.

How do we know how far to move through the 3D color world? This depends on the materials and the intensity of the light. All that we see is due to reflection, and materials determine the properties of that reflection. A chrome sphere will strongly reflect the color of a blue light source.

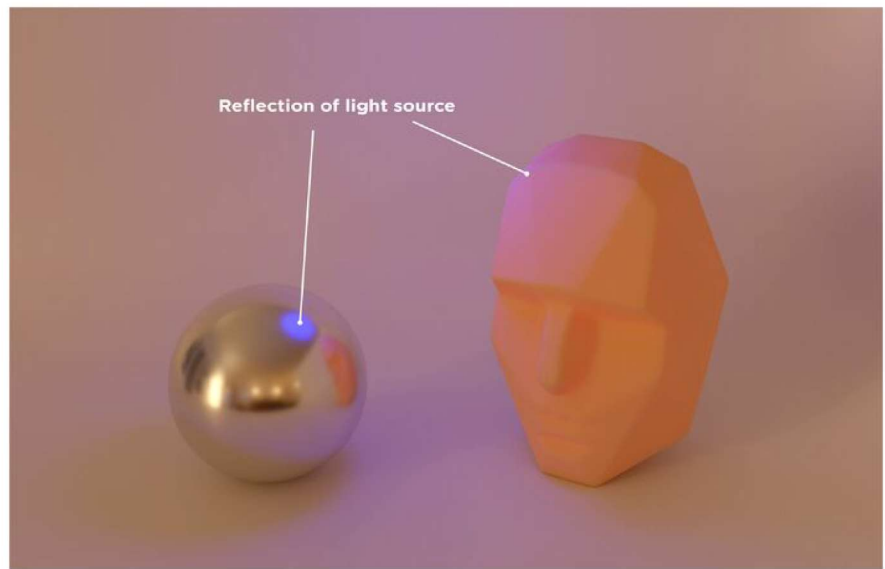


Fig. 6. Materials reflect light differently. The object on the right has a diffuse reflection, which does not perfectly reflect back the blue light, unlike the specular reflection which acts a mirror.

A strong blue light on a chrome sphere, as in figure 7, will strongly reflect the color of the light source. A strong blue light on skin, with its unique material properties, will have the resulting color be pulled to the color of the light source but not all the way, resulting in pinks. In the example paintings below, compare the overall temperature of the light to the shadow.

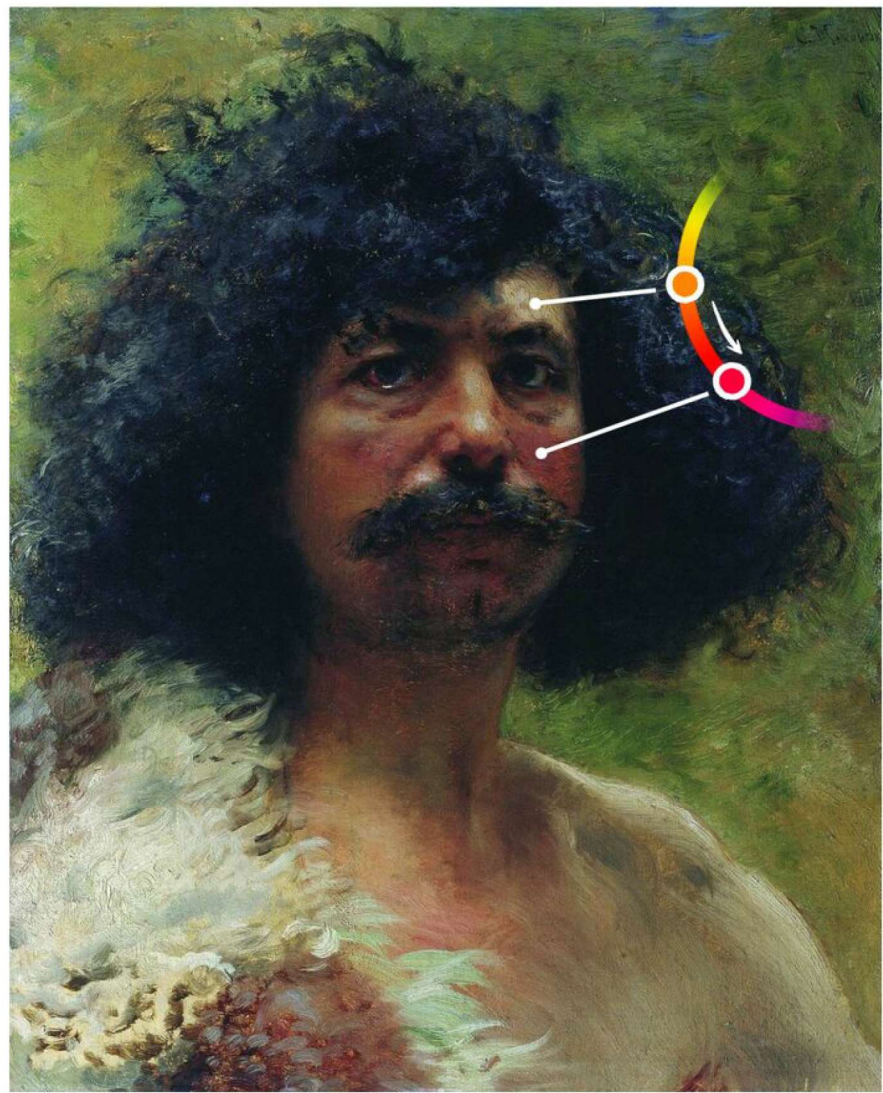


Fig. 8 (above). Konstantin Makovsky *Man's Head*, 1897. The shadow side is reflecting a cooler environment compared to the light.

Fig. 9 (opposite). Leopold Müller *A Sphinx Face*, 1834-1892. The shadow side is reflecting a cooler environment compared to the light.

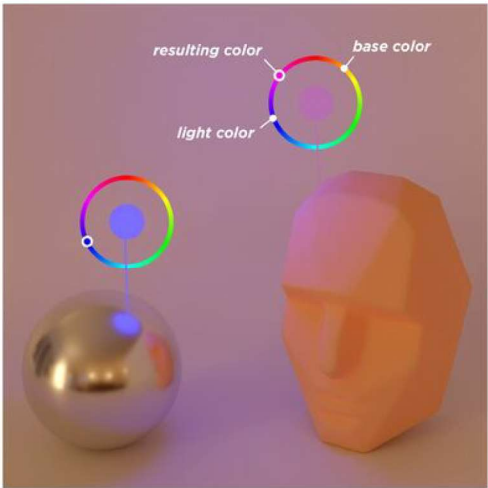
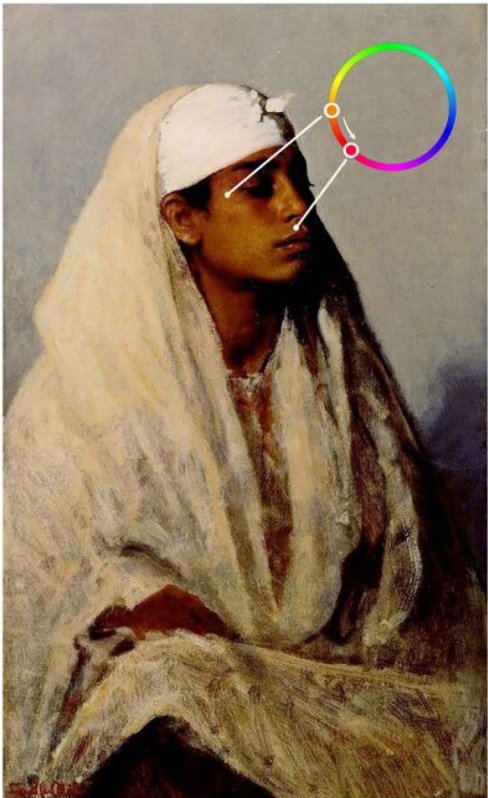
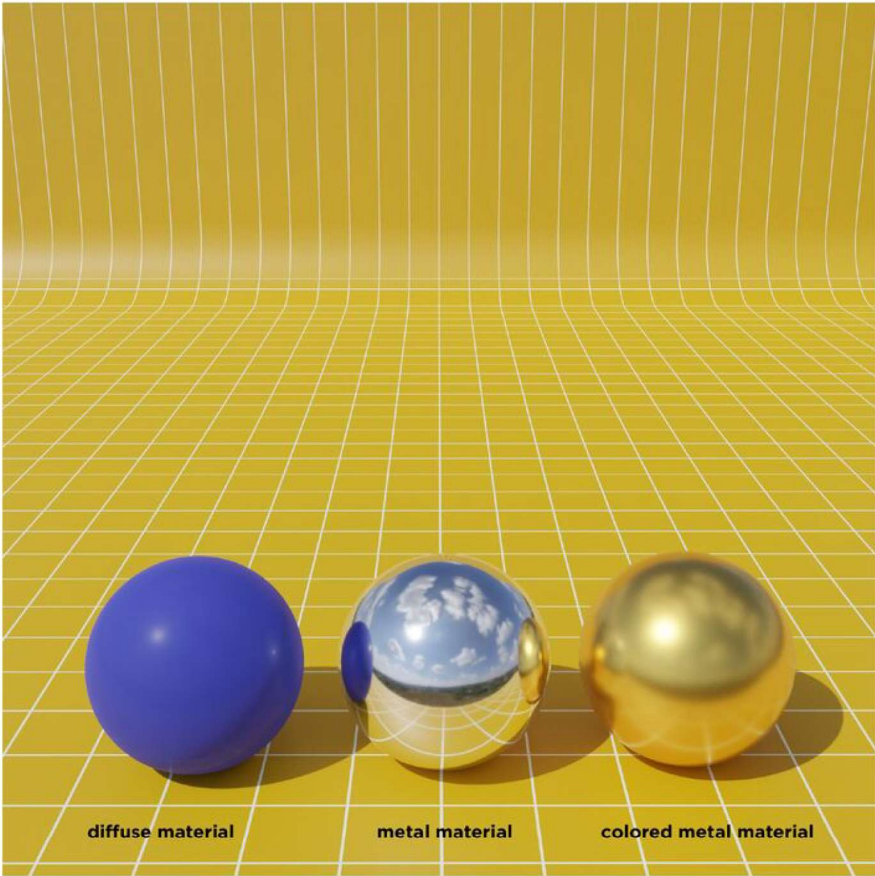


Fig. 7. In a diffuse material, the resulting hue shift from light will wind up somewhere in between the base color and the light color, depending on how strong the light is and the properties of the material that is reflecting the light.





Different materials reflect and absorb light differently. Diffuse materials absorb and scatter some wavelengths beneath the surface while reflecting the rest, chrome like metals reflect all of the light equally, and some metals are colored due to uneven absorption and emission by their electrons.



The more pure and strong the reflection of the light source, the further the shift in color towards it. The direction of hue shifting depends on the material. A yellowy-green grass will travel through the greens when reflecting the blue sky, while as seen in figure 8, skin will often go through the pinks.



Fig. 10 (across). Different materials with different properties reflecting the same scene.

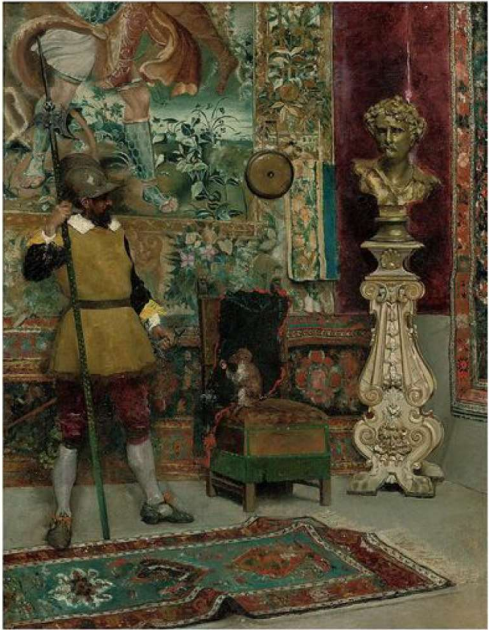
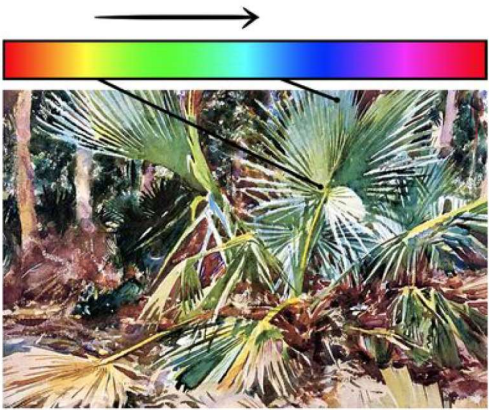


Fig. 11 (opposite). The variety of materials in this scene are all reflecting the same environment.

Fig. 12-13. Isaac Levitan *A Garden*, ca. 1890s, and John Singer Sargent *Palmettos*, 1917. The shadow side of these plants are shifting through the greens over into the blues due to the reflection of the sky.





By knowing the material, the environment, and 3D structure of what we are drawing, we can make a good guess as to the colors and resulting temperatures. All color is due to reflection. Imagine what each plane “sees.” When a surface is no longer “seeing” the light source, it turns into shadow.

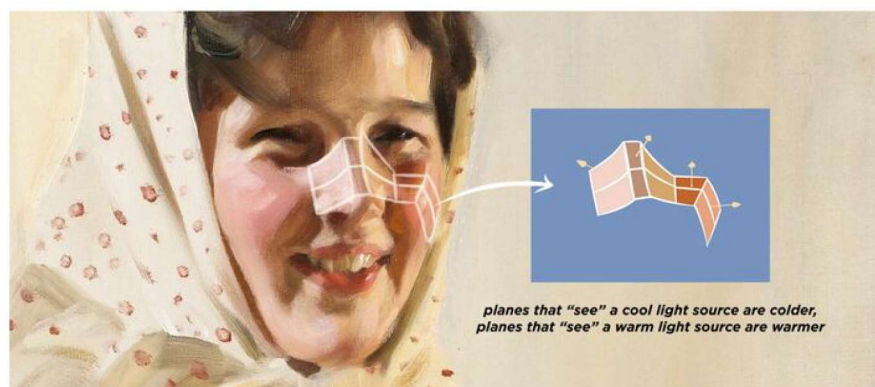
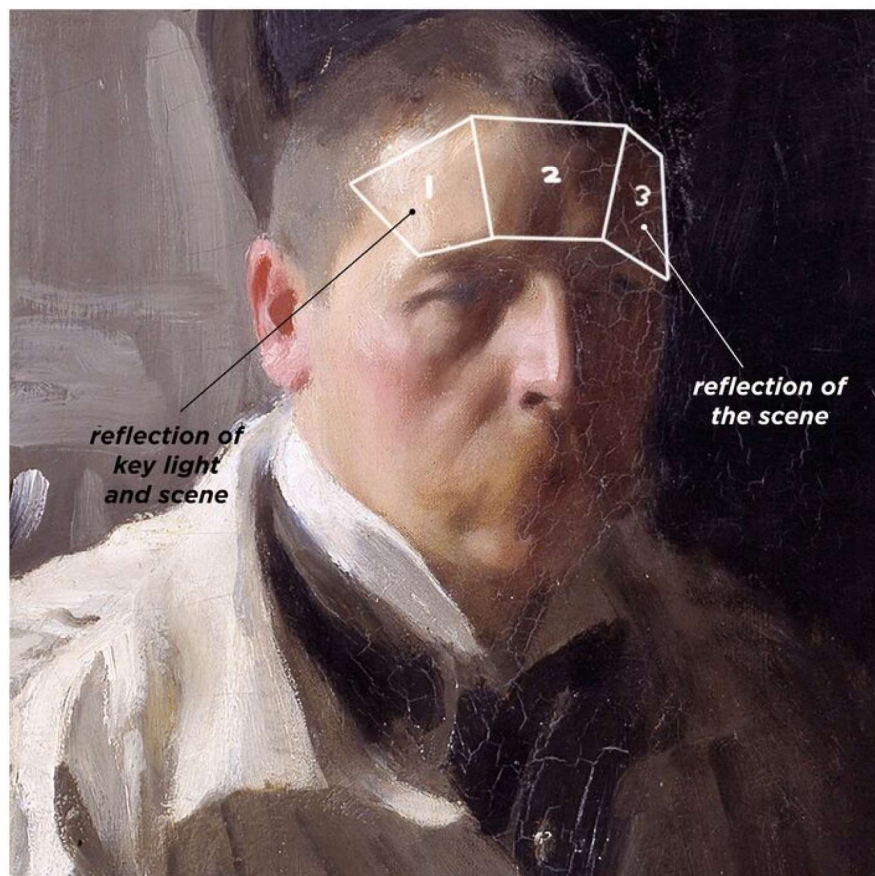
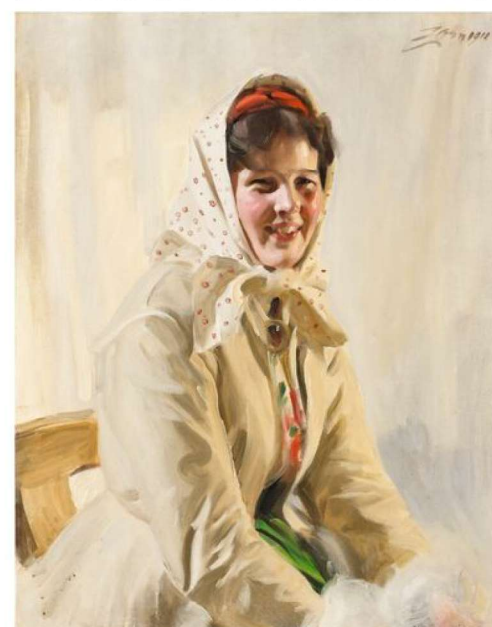


Fig. 14-15. Anders Zorn *Self Portrait with Model*, 1896. By imagining what each plane is facing, we can determine what part of the environment it is reflecting.



Fig. 15-16. Anders Zorn *Skeri Emma*, 1911. The temperature of each plane in a diffuse material is an average of what it is reflecting.





In figure 6, the planes being lit are “seeing” and reflecting a light source that is relatively colder than the indoor environment. In figure 7, with sunlight, the white light of the sun looks warm compared to the blue influence of the sky. Sunlight is white light, or a combination of all of the wavelengths, and is not yellow.

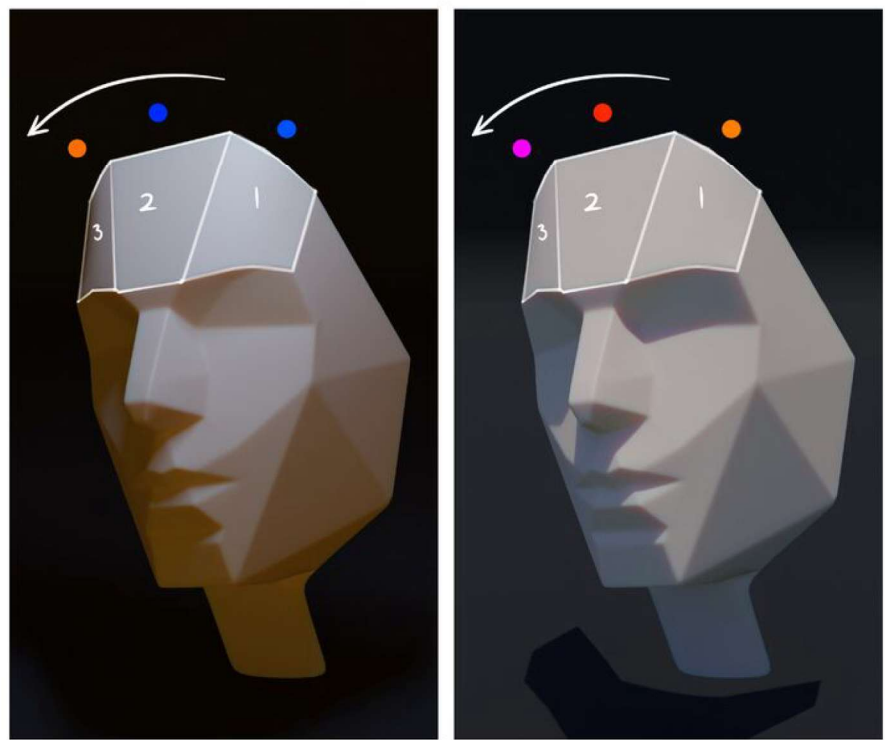


Fig. 17-18. A comparison between shadows that are warmer compared to the light, and shadows that are cooler compared to the light. Sunlight is a combination of all the wavelengths, making white light, and is not yellow or orange unless the blue wavelengths are filtered out at sunset.

The color we see is actually energy. The sun produces it, and our eyes perceive a narrow range as color. High energy appears blue, lower energy red, and beyond those are ultraviolet and infrared. You might notice that the band of visible energy is similar to the color wheel.

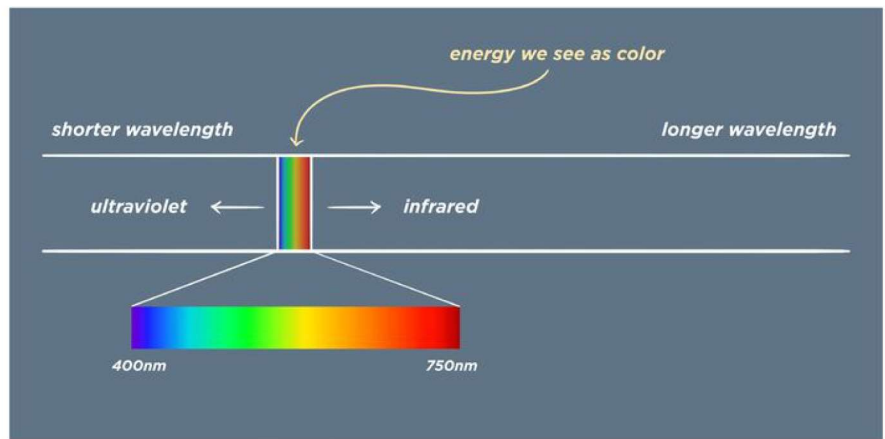


Fig. 19. The electromagnetic spectrum. The color we see is actually our perception of a form of energy called electromagnetic radiation. Sunlight produces the widest range of this energy, and we can see in the entire spectrum that visible light makes up is only a narrow band. When interpreted by our brain, the shorter wavelengths appear blue, the longer wavelengths appear red, and beyond those we have the very short ultraviolet, and the very long infrared, which we can not perceive.

The cells in our eyes detect the proportion of short (blue), medium (green), and long (red) wavelengths, then our brain mixes these into color. Visible light is not a wheel, but it can be conceived of as one with pinks being how our brain interprets the mixing of red and violet.

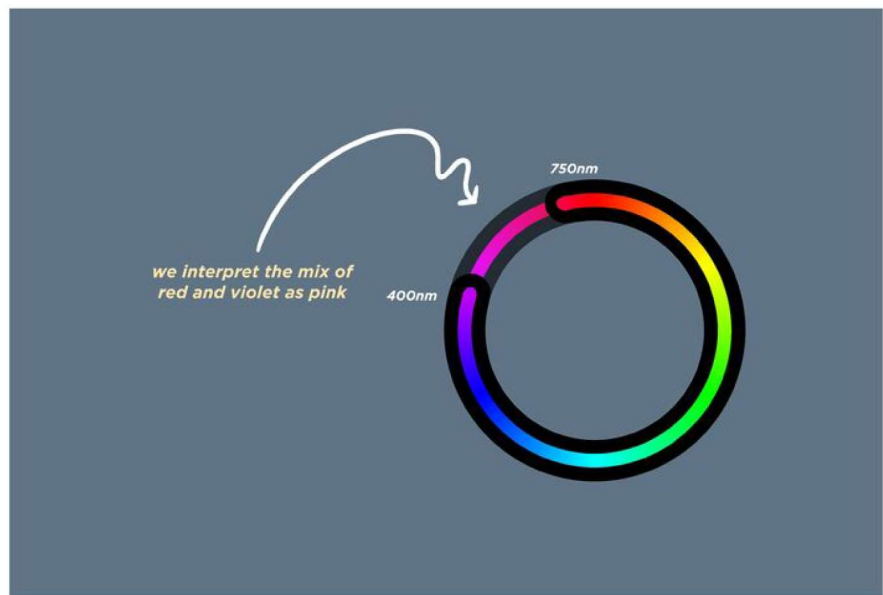


Fig. 20. The narrow band of energy from the electromagnetic spectrum can be made into a continuous wheel. When our brain interprets the mixing of blue and red wavelengths, pink is perceived as an intermediary color.

The colors we see depend not only on what wavelengths the object’s material can reflect, but also what wavelengths come from the light source. Sunlight is white light, or a mix of all of the wavelengths.

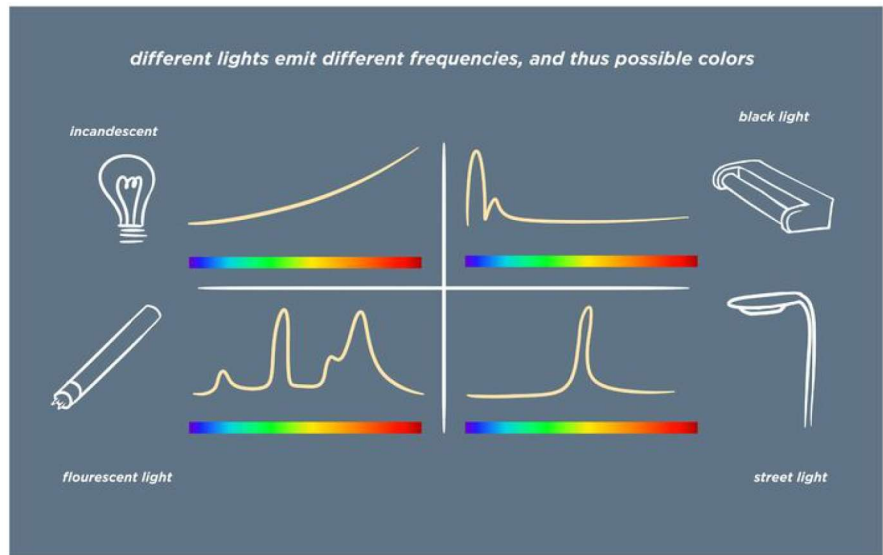


Fig. 21. Different light sources emit a different spectrum of frequencies. Sunlight produces the widest range, while common man made light sources have strong peaks in certain frequencies. Under these light sources, only certain colors can be reflected by objects and therefore be present in our scene.



The sky scatters short wavelength blue light from the sun, known as Rayleigh scattering. Planes in the shadow here “see” mostly the sky. The shadow on the ground sees the plane of the cheek on the far side of the face, mixing with the sky in the shadow color.

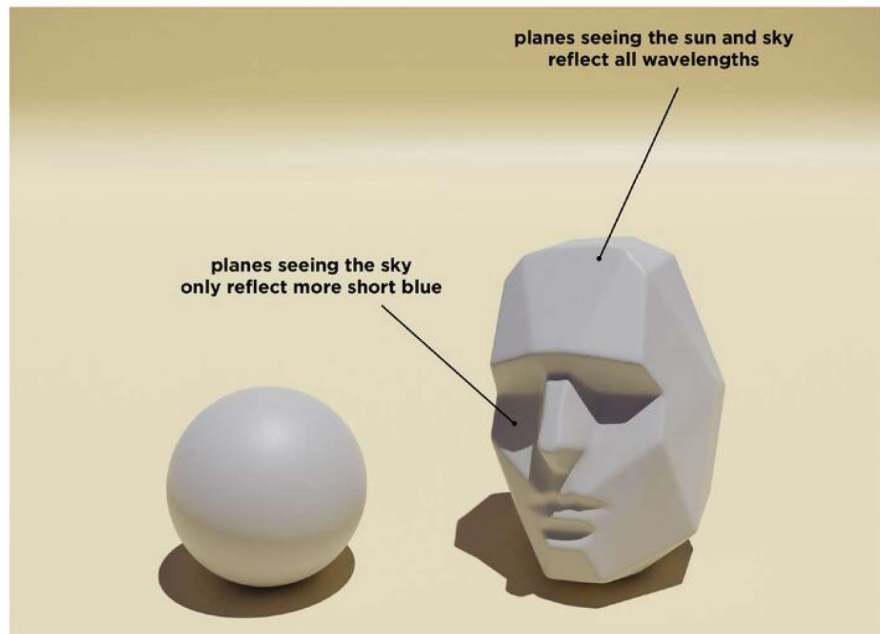


Fig. 22. All of the planes of the objects are reflecting the environment. The planes in light reflect both the sun and the sky, and the planes in shadow reflect sources other than the sun, like the sky and reflected light from the ground.

Blue light from the sky results in the shadow areas reflecting cool light, but that strong bounce light influence warms up the downward facing planes since those see the ground. Areas that bounce more than once have increased saturation, or purity of wavelength, like a mirror reflecting multiple times.

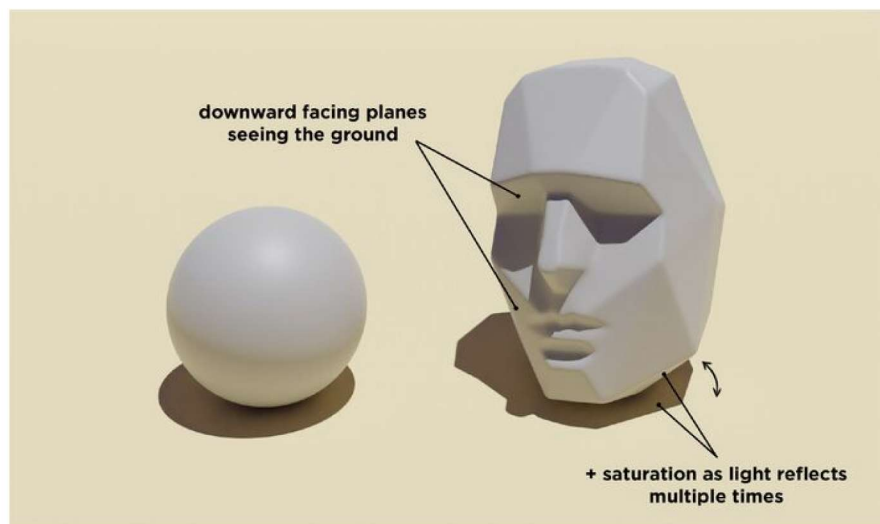


Fig. 23. In shadow, planes facing upwards reflect more of the cool sky, and the planes facing downwards reflect more of the warm ground. With multiple bounces of light, saturation increases.

If we have an object that reflects blue light, which would appear blue under white light, under a light source that only emits red light it would appear black since it is absorbing all of the energy. This means that we have to keep in mind what wavelengths are present in our scene across the various light sources, and what wavelengths our materials are capable of reflecting. Under white light, objects show more of their local color since all wavelengths are present.

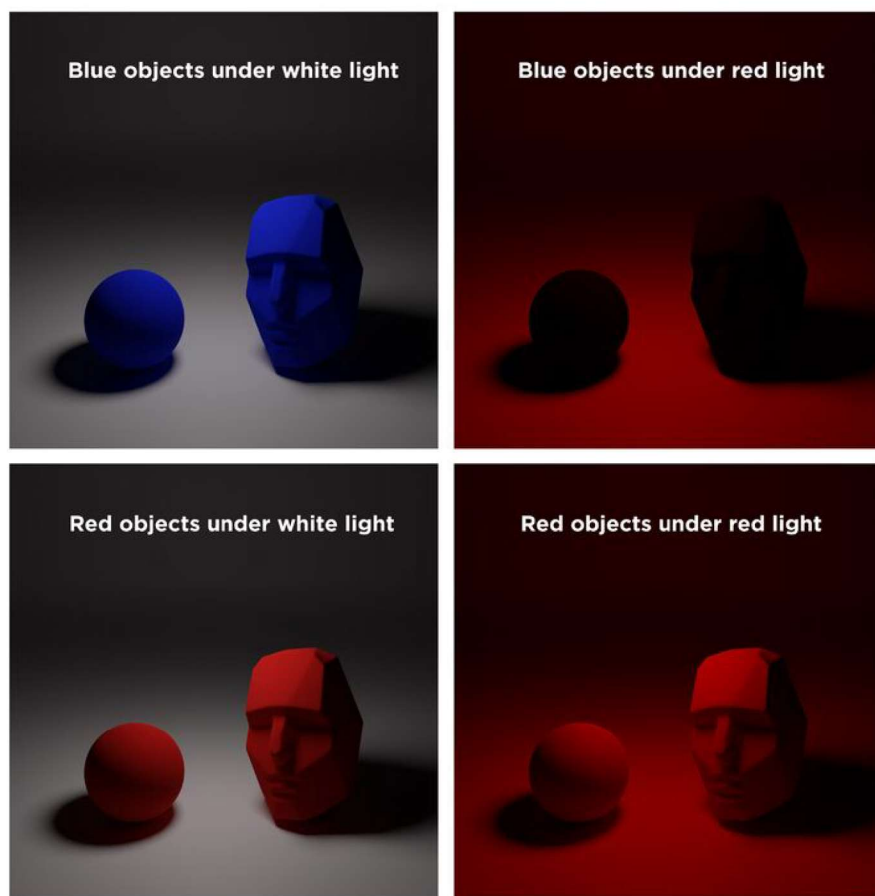


Fig. 24. If light in the scene does not contain wavelengths that a material is capable of reflecting, it will appear as black. Note how under white light we can see the local color of both the ground and the colored objects.



We've gone over a lot of the science, but now how do we use all of this creatively in our paintings? The secret and key to the whole thing is in a property of color called Chroma. Chroma is distinct from, but related to, saturation. You can have a highly saturated yellow hue at a dark value. This would mean that it is a pure color, but at a low intensity. That color is not high chroma, because it appears brown and not what we would describe as yellow.

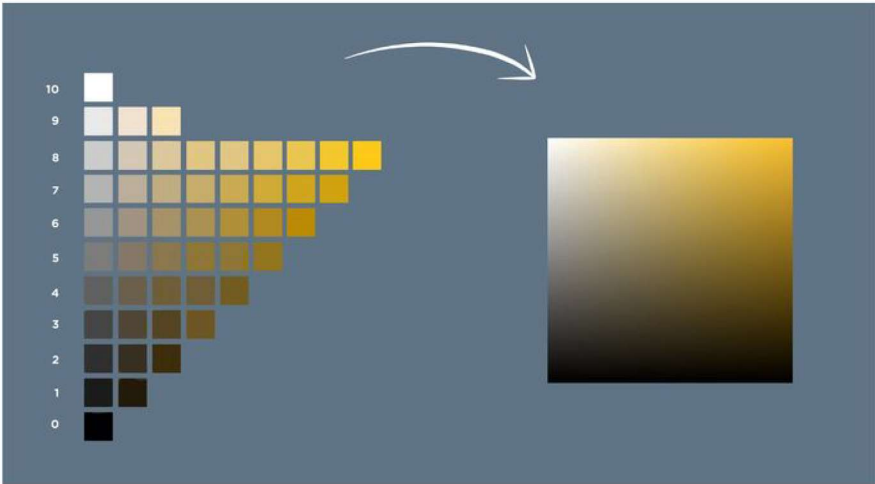
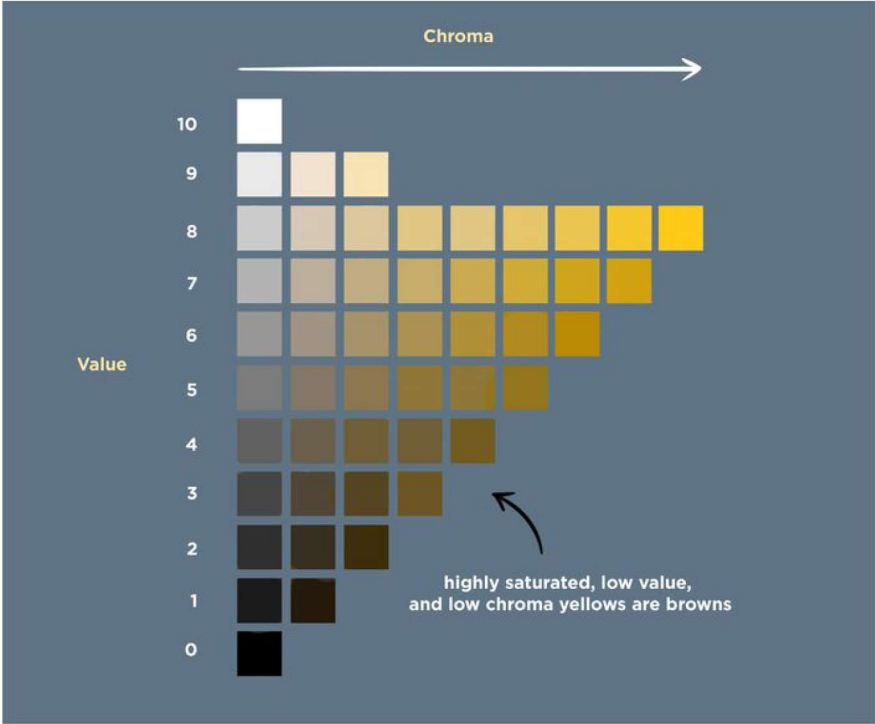


Fig. 25 (above). The Munsell Color System. Each hue has a peak chroma at a different value.  
Source: <https://www.youtube.com/watch?v=92QD0YbzLLo>

Fig. 26 (opposite). A color has high chroma when it is most identifiable as that color. While browns are saturated yellows, they are not high chroma.

Fig. 27. The Munsell swatches for each hue are stretched to fill the hue cube or triangle.

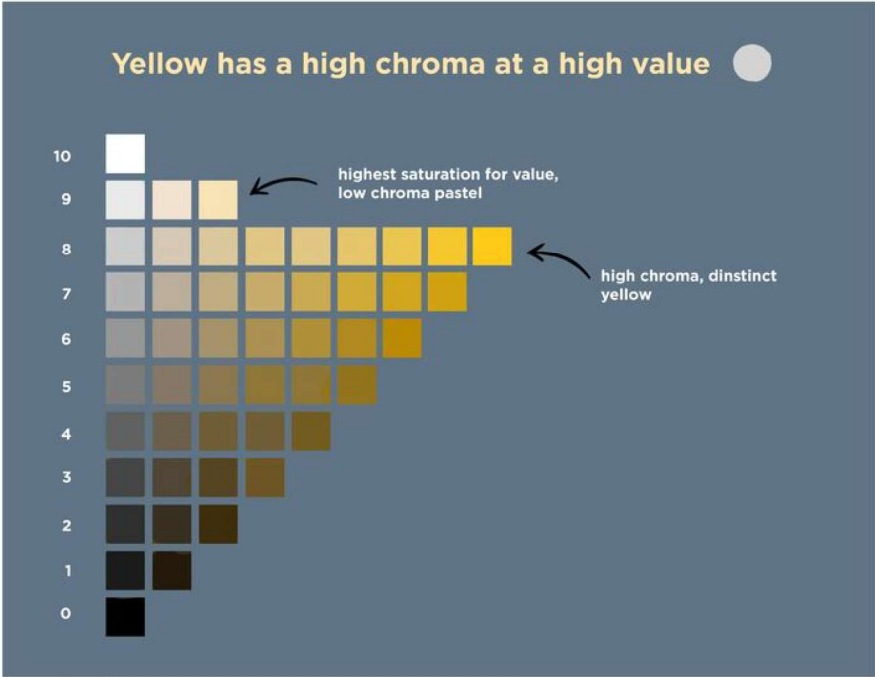


Fig. 28-29 (opposite). Yellow has a high chroma at a high value, and red has a high chroma at a middle value. The relationship between value, saturation, and chroma is the key to understanding color.



Fig. 30 (above). The high value of a high chroma yellow.

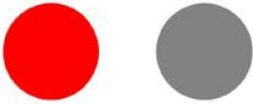
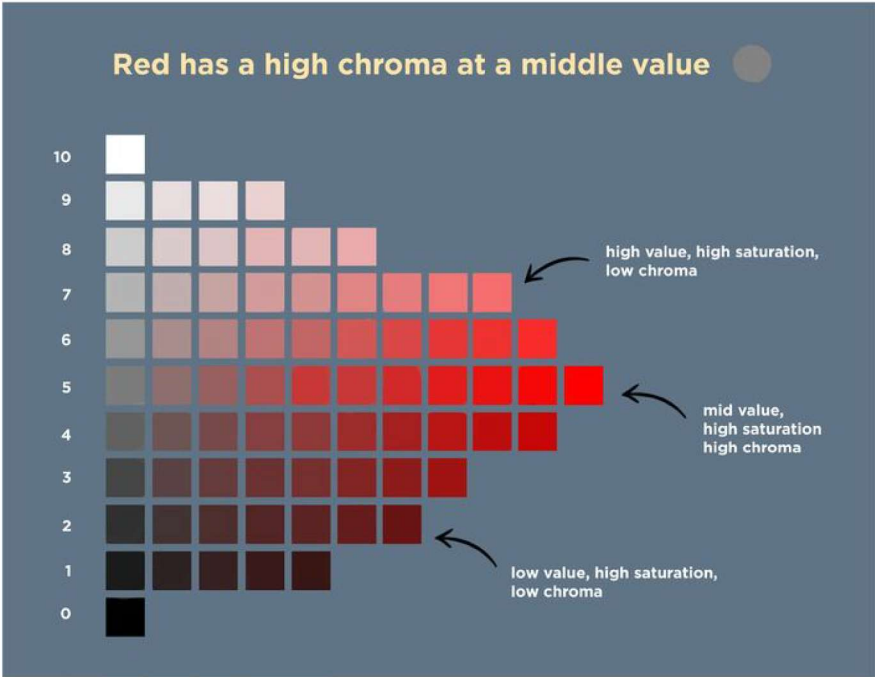


Fig. 31 (above). The middle value of a high chroma red.



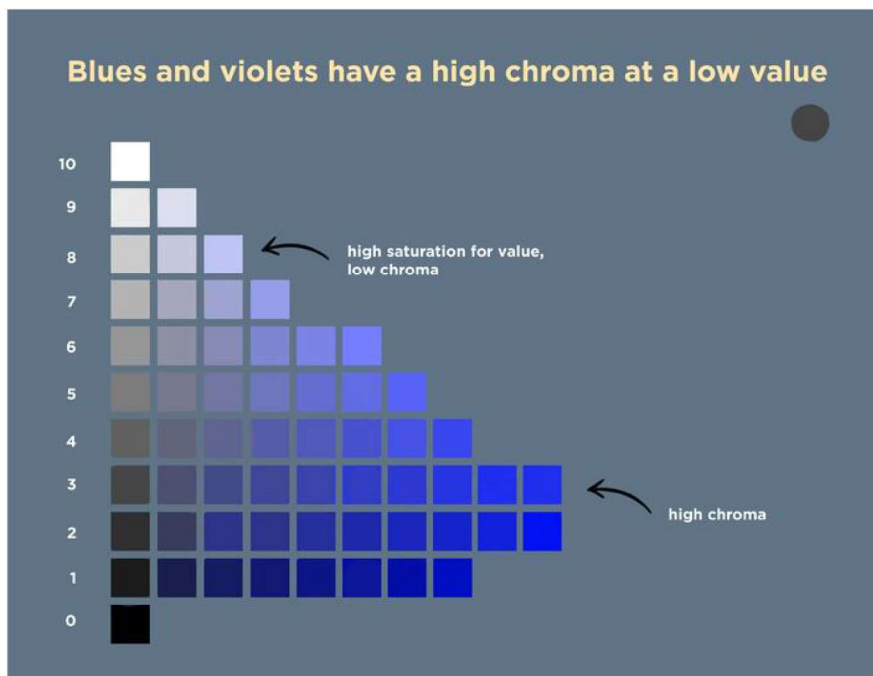


Fig. 32 (opposite). Blues and violets have a high chroma at a dark value.

Say we have a greyscale image, and we want to make a light value T-shirt a deep blue. It will always look pale and pastel. A black and white image is suggesting possible colors. A color image already has all of the values defined. This is the way that colors and values relate to each other.



Fig. 33 (above). The dark value of a high chroma blue.

Fig. 34. We can use our knowledge of the relationship between chroma and value to plan the colors of our paintings and relate that to the value structure.

If we wanted to pick a high chroma color for this shirt, we can select the greyscale color, and then use the color picker to find a high chroma color to match. By working this way, we can get an intuitive sense of what value a color is that can be used even in oil painting.

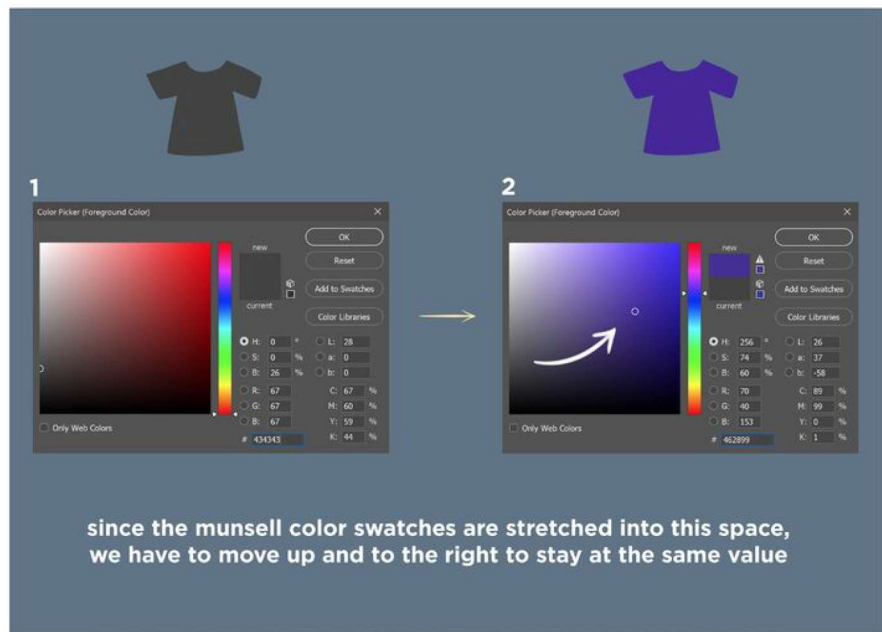


Fig. 35. In figure 7, we saw that the Munsell swatches were stretched into the hue cube. This distorts the relationships, so we need to move diagonally in order to stay at a consistent value, and not straight across.

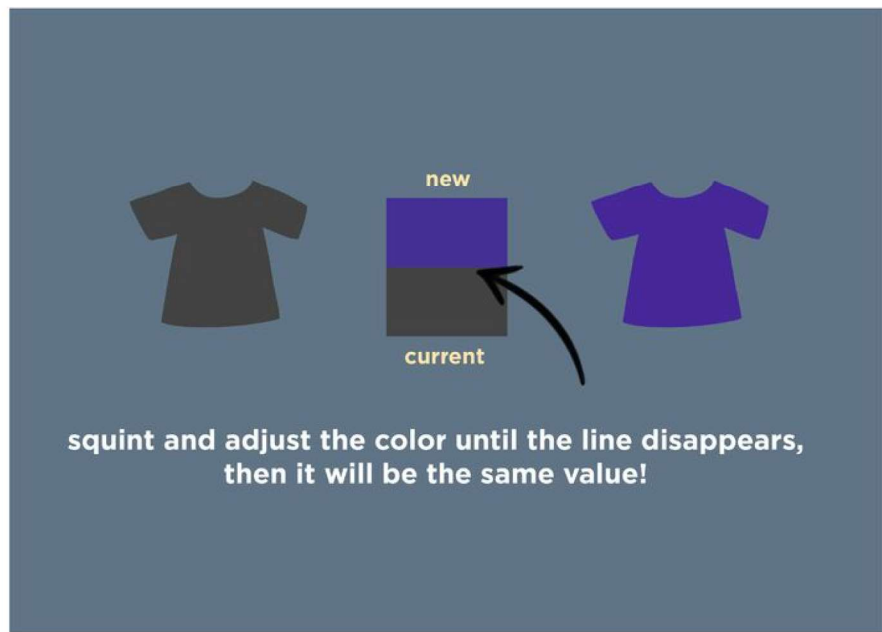


Fig. 36. We can train our eyes to see high chroma colors as their value by comparing between them directly.





With this scene in figure 9, Levitan wanted to communicate the blue of the water compared to the autumn yellows of the trees. He chose the right color, therefore one value, and related everything else to that. When you “key” to something, you define that decision as accurate and compare to that. He did not necessarily see the the water at this exact value, but made decisions as to how to best relate what he saw to what his medium could express. It is important to always keep in mind how the decisions you make relate to the upper and lower bounds of the possible information you can express.

Here in figure 9, the idea is no longer about the blue water, but the detail in the dresses and marble. The variety of temperature would not read against an intensely blue sea, so the value is lowered to be part of the dark value group, and chroma is lost. The painting is “keyed” for the marble, allowing for all of the variety of temperature within it.



Fig. 37 (opposite). Isaac Levitan *Autumn River*, 1899. An idea is the most important thing to have while painting, and technical fundamentals are the language we use to express those ideas. I believe that when Levitan was looking at this scene, the first thing he noticed was the blue of the water and he wanted to express it.



Fig. 38 (above). Isaac Levitan *Big Road, Sunny Autumn Day*, 1897. By knowing the idea that we want to express, we can confidently choose the values of the painting to be the values to allow for chroma of that color. Here, the orange autumns and greens were important to the idea, so the values were chosen to allow for those colors, and every other decision related to that.

Fig. 39. Lawrence Alma Tadema *A Dedication to Bacchus*, 1889. The color detail in the marble and white fabric is central to the idea of this painting, so the value structure is made to support that.





Fig. 40. Isaac Levitan *A Garden*, ca. 1890s. Since the scene is mostly backlit, the color of the shadows and the brilliant glowing edges is most likely what Levitan wanted to show, therefore exposing for shadows was the technical method to express the color idea.

Keying is related to exposure. When we decide on our exposure we decide what value group has more information. By exposing for the shadows in this example, our shadow values wind up in the middle area where green can have the highest chroma, and a variety of temperatures are expressed. The lights, since they have to be far enough apart, approach white where chroma is lost.

Now, the opposite is true. Exposure is set for the grass in light, the value of light in this painting is the same as the shadow in the previous one. There is a variety of temperature and color in the light, and the shadows need to be far away, so they are dark and low chroma.

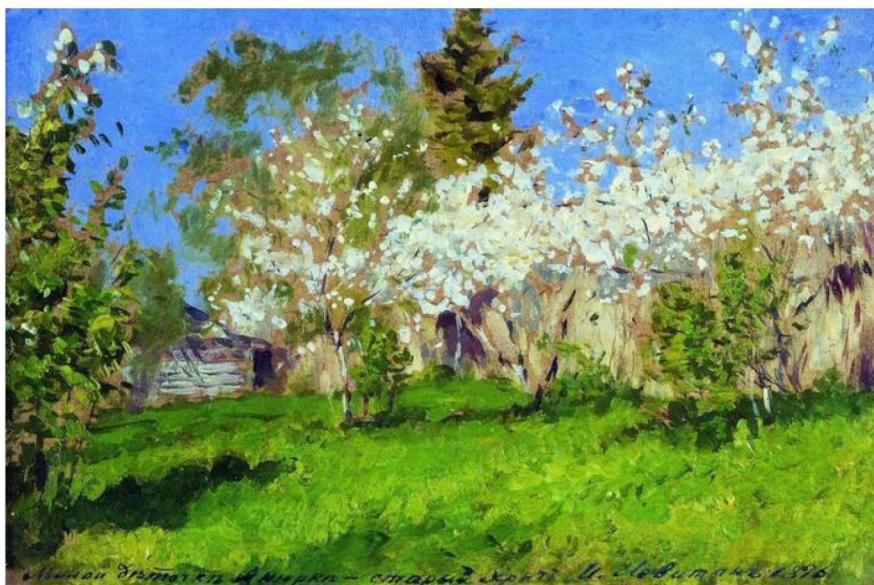


Fig. 41. The shadow of the tree in shadow in one painting is the same value as the lit grass in another painting. Values are relative, and if we want to show color in the shadow, we can place its value in the middle of our scale, and if we want to show color in the light, we can do the same, and all other decisions have to be related to that.

Fig. 42. Isaac Levitan *Apple Trees in Blossom*, 1896. The exposure is set for the field of grass in the light, and the value of the light in this painting is similar to the value of the shadow in the previous one. There is a variety of temperature and color in the light, and since the shadows need to be far away, they are dark, and by extension, low chroma. The shadows of the lighter objects are in a value range that can still show some blue color identity. Since the value of the white flowers in sunlight are so light, they start to clip as well, allowing the flat white shapes to be a compositional element. Because we exposed for the lights which lowers the values in the light, and blue has a high chroma at a darker value, it allows the colorful blue sky.



In this example, the important part of the painting is the intense color at the horizon, due to scattering in the atmosphere, as well as the difference between warms and cools in the sky. The exposure was controlled to allow for values that supported these color ideas.

What we show can be based on what our medium can express best. Here, the finished work is exposed for the the info in light, the sketch is exposed for chroma in the shadows. As long as relationships stay consistent, there are infinite “accurate” ways to express the same scene.

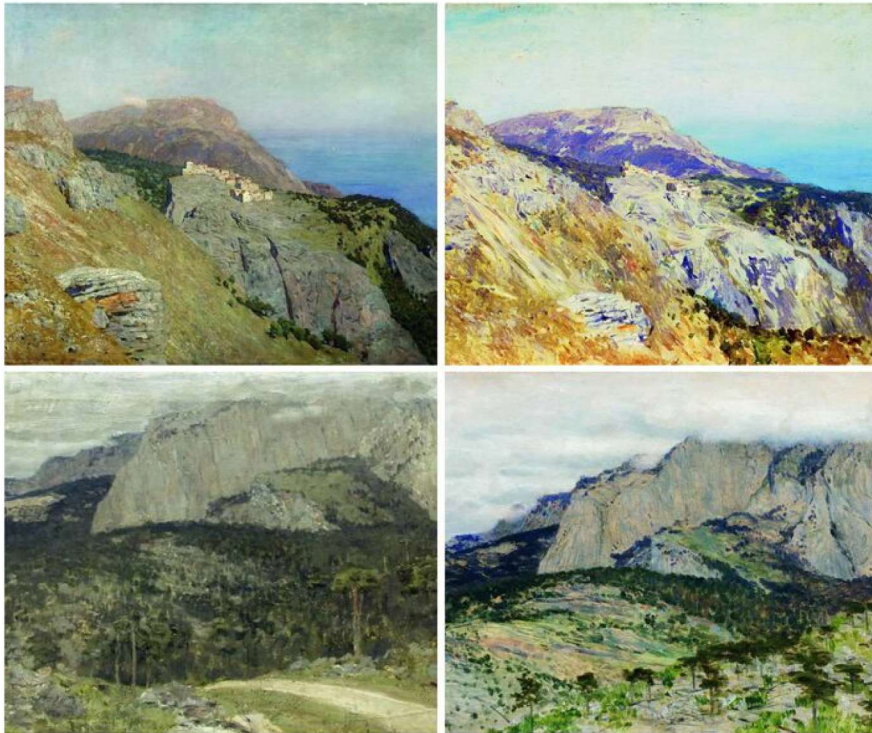


Fig. 44-47 (above). Top row: Isaac Levitan *Corniche, Southern France*, 1894. Bottom row: Isaac Levitan *A Gray Day. Mountains. Crimea.*, 1886, and Isaac Levitan *Ai-Petri*, 1886.

With watercolor, as seen in the examples in figures 6-7, we can have the paper as overexposed light, and a full range of color in the shadow. By understanding the relationship between color and value, we can make creative paintings that are technically sound, play with mediums, and adapt reality to support our ideas.



Fig. 43 (above). Isaac Levitan *Noon*, 1888. The color at the horizon is the main idea of this painting, so we need a relatively dark value there to support that. We can see the intense chroma far towards the horizon as the light travels through the atmosphere and is shifted through the greens to blue. It is possible to have very dark values and intense colors in the distance, as long as the values have the right relationships and level of contrast.

Fig. 48. John Singer Sargent *Muddy Alligators*, 1917.



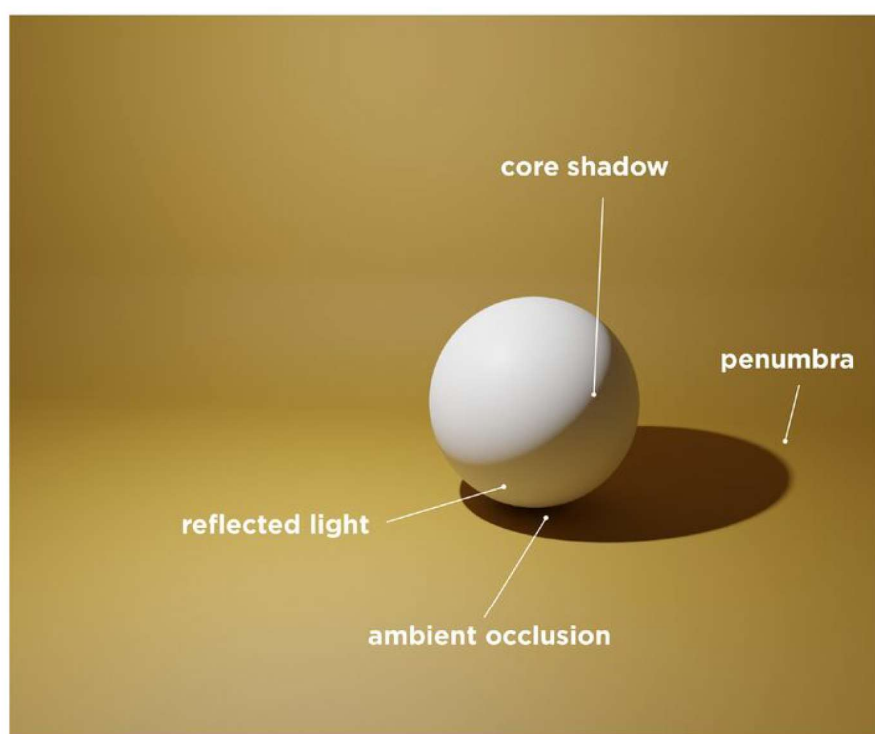
Fig.49. John Singer Sargent *Corfu Lights and Shadows*, 1909.



## 08

# LIGHT & SHADOWS

Have you ever noticed that darkest part of the shadow right before the reflected light on a form? That's called the core shadow. Why do they happen, and are they a part of every shadow?



I remember being very confused about core shadows - often I wouldn't be able to see them at all. I'd paint them in and it would look wrong and I wouldn't know why. They are a useful tool to show form, but they happen under specific circumstances. Where are the core shadows in the painting in figure 1?

The secret to shadows is that as the size of the light source increases the shadows become softer. When the source is small, the light comes from a limited area, the line between light and blocked light is clearly defined. You get a sharper cast shadow, and defined core shadow. When the light source is larger, the light rays come from a greater area and can still reach some of the areas blocked by an object. When this happens you will get a softer cast shadow, and the core shadow will be less defined and eventually disappear.



Fig. 1. Edgar Maxence *Reverie*, ca. 1918. Beginner painters are often taught about the importance of core shadows for describing form, but depending on the lighting conditions they can be easy to miss.

Fig. 2. The elements of a shadow.



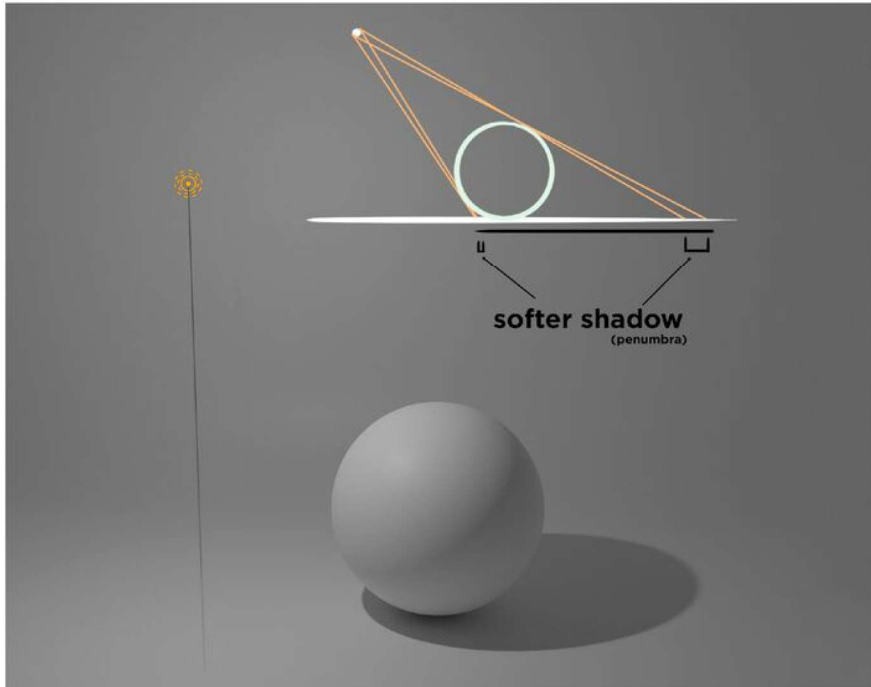


Fig. 3-4. John Singer Sargent *Ena and Betty, Daughters of Asher and Mrs Wertheimer*, 1901. With a small light source, cast shadows and core shadows are defined.

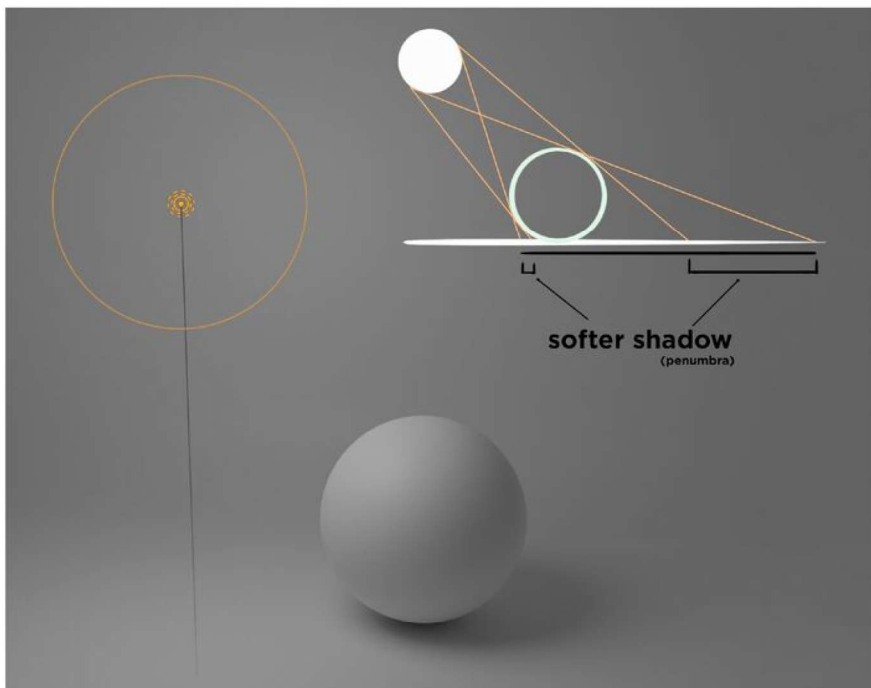


Fig. 5-6. Émile Friant *Young Lady from Nancy in Snow Landscape*, 1887. With a larger light source, the shadow becomes more diffuse, and the core shadow becomes much less pronounced.

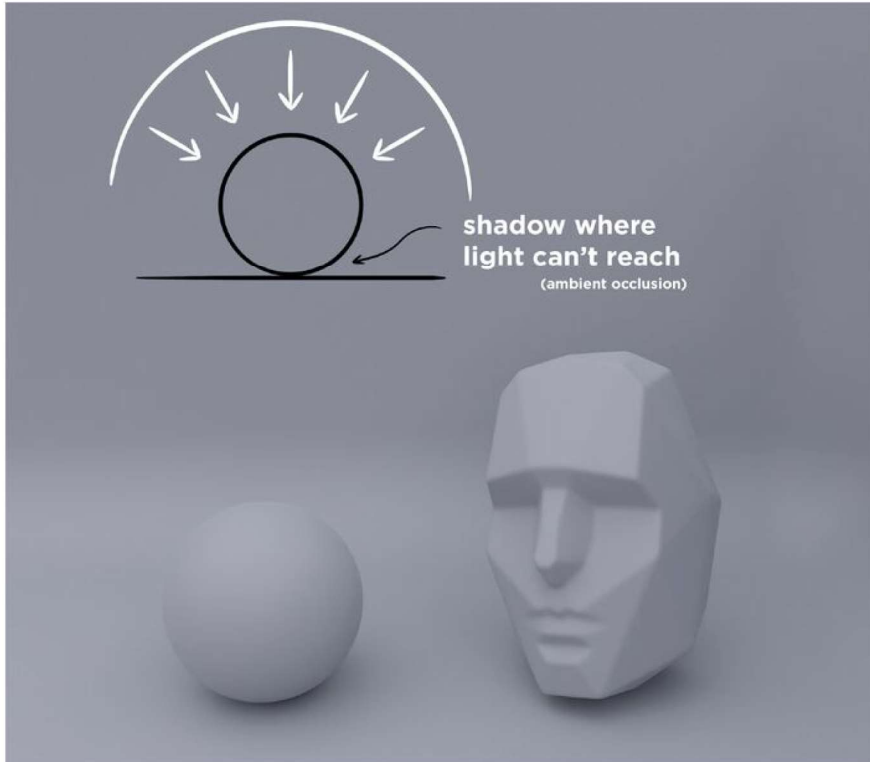


Fig. 7 (opposite). A common large light source is the sky. Cloudy days scatter light so the scene is evenly lit from all directions. Instead of core shadows, you get soft shadows in areas where light can't reach, and secondary light causes changes in temperature and hue with tiny changes in value instead.



Fig. 8 (above). Émile Friant *Self-Portrait*, 1887. An example of soft lighting from a large light source.

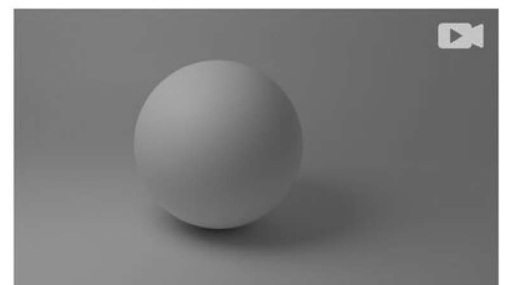


Fig. 9 (above). For an animation showing what happens as the light source size increases, head to: <https://www.youtube.com/watch?v=U9X5dN-RLfg>. Notice the how the cast shadow as well as the form shadow changes.

Fig. 10 (opposite). Jules Bastien-Lepage *October*, 1878. An example of soft lighting from an overcast sky.





To understand sunlight, break it down into its parts: the small source of directional light from the sun, and the large secondary light in all directions from the blue sky. The area in shadow will be influenced by the secondary light, so it will be cooler than the sunlight.

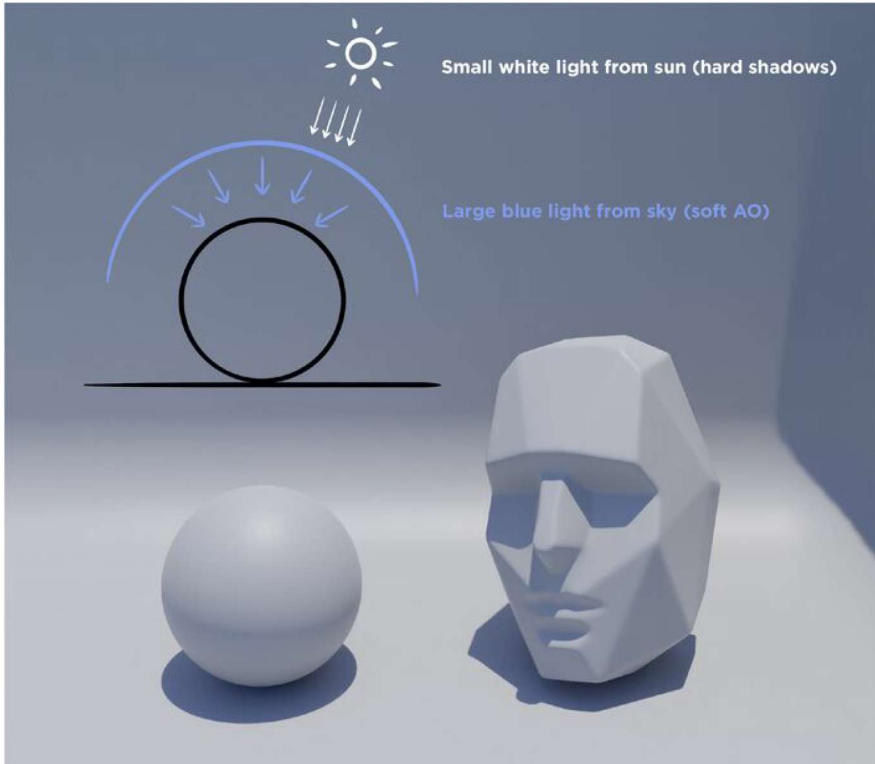


Fig. 11 (opposite). There are no visible core shadows, just hue change from the reflection of the colored ground.

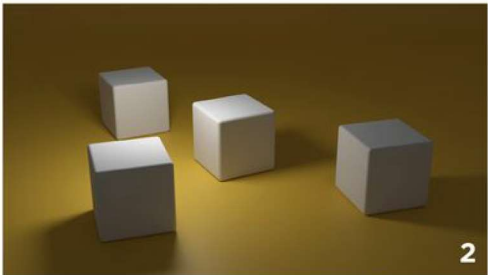
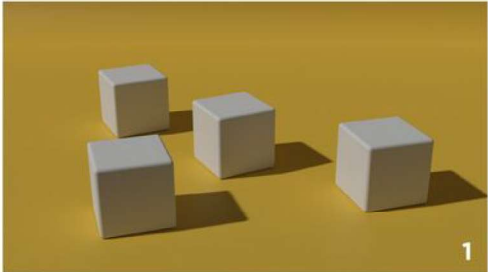
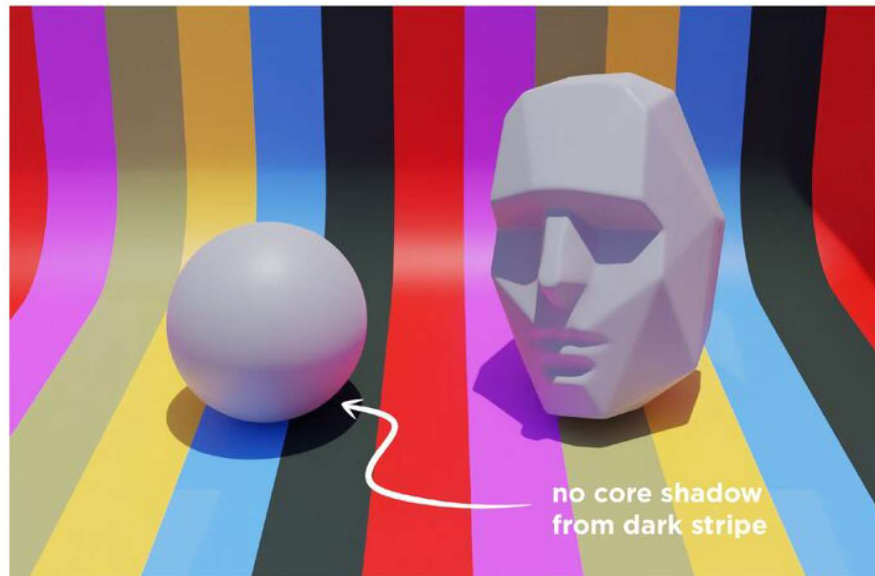


Fig. 12-13. The sun is huge, so why does it cast sharp shadows and cause core shadows? The sun is so far away that it can be considered a tiny light source from infinitely far away. This means shadows will be cast all in the same direction as in example one, rather than out from a point like a lightbulb, like in example 2.

Fig. 14. In outdoor sunlight, there are three main things to keep in mind. The direct light from the sun which casts hard shadows, and then the soft light from the sky, which causes soft shadows. Note how within the cast shadows on the ground of the objects there is an ambient occlusion shadow where light from the sky cannot reach.

If there's no reflected light, there's no core shadow. Notice how the color and material of the ground affects the reflected light and thus the core shadow.



These elements, such as core shadows, ambient occlusion, and more, are all different results of the same principle, so rather than memorizing different rules, we can think of the basic properties of light, and that way we will be able to understand any lighting situation we come across.

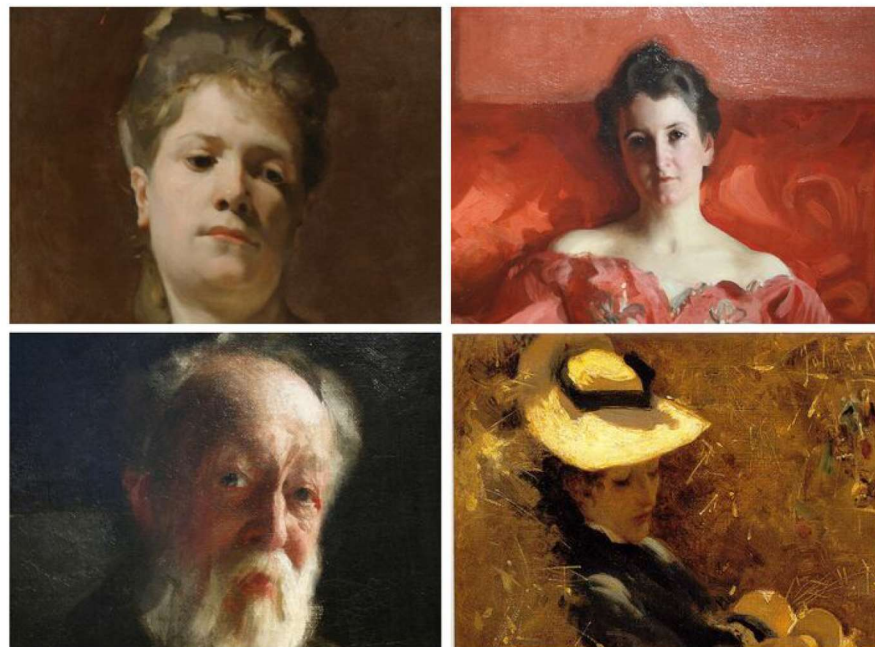


Fig. 15. Core shadows are visible due to the influence of reflected light. If there is no reflected light, then there is no core shadow.

Fig. 16. John Singer Sargent *Blonde Model*, ca. 1877, Anders Zorn *Portrait of Mrs. Howe*, 1900, Anders Zorn *Portrait of Thomas Wheeler*, ca. 1890s, John Singer Sargent *Resting*, 1875. These paintings contain a variety of light source sizes.

*“Rather than memorizing rules...we can think of the basic properties of light, and that way we will be able to understand any lighting situation we come across.”*



# GLOSSARY

## A

### **Absolute**

Copying information without regard for relationships or place in a hierarchy.

### **Ambient occlusion**

Darkening of areas where light is less likely to reach, such as wrinkles and crevasses. Important for overcast lighting situations and also rendering inside the shadows, depending on the exposure.

## B

### **Base color**

The hue an object reflects under white light.

### **Broad**

A manner and result of working using the expression of large, overall relationships.

### **Budget**

a way of thinking about contrast. The smaller the range of information your medium can express, the more controlled your budget has to be to keep groups reading as different.

## C

### **Cast shadow**

The absence of light due to one form blocking it from reaching another.

### **Chroma**

Refers to the relationship between value and the intensity of a hue. For example, yellow is most intense at a high value, red at a middle value, and blue at a low value.

### **Color**

An element of painting, a 3D space including Hue, Color, and Saturation.

### **Color space**

The 3D space created by hue, value, and saturation being plotted against each other.

### **Color wheel**

the EM spectrum with pink as an intermediary color as perceived by the brain

### **Complement**

The opposite of a color, mixing complements creates grey.

### **Compression**

The act of reducing information while keeping relationships the same. Allows the use of simple elements in order to design.

### **Conceptual**

Objective information about a subject outside of one viewpoint, includes areas such as constructive drawing, perspective, etc. Exists on a hierarchy between conceptual and optical in drawing.

### **Construction**

How an object is built. A conceptual drawing idea dealing with subjects such as anatomy and planar analysis of form.

### **Contrast**

The juxtaposition of two different states. Can refer to value, edge, color, narrative, psychological, etc. The degree of difference is relative based on comparison.

### **Core shadow**

The darkest part of the shadow caused by reflected light partially filling the shadow area.

## D

### ***Design***

decision making about relationships using information that is compressed to varying degrees.

### ***Diffuse light***

Light from a large light source causing soft shadows.

### ***Diffuse material***

A material that primarily reflects light in many directions. Can also include specular reflection, diffuse reflection, see volume 1

### ***Direct light***

A lighting condition with a small or powerful light source causing a clear separation between light and shade. A wide choice of exposure is possible, accentuating either bounce light or form in the midtones. *See: overcast*

### ***Drawing***

The expression of relationships, most commonly referring to both 2D and 3D space relationships. The most fundamental element of painting.

## E

### ***Edges***

An element of painting, contains a hierarchy of contrast from soft to hard. Closely related to and determines value and drawing decisions.

### ***Environment***

The entirety of the scene which interacts with light sources.

### ***Exposure***

The amount of light let into the eye, or in photography, the camera sensor or film. Exposure determines the relative value relationships achieved through compression. Can also refer to the length of time being recorded in a painting. *See Volume 1 for more information*

## F

### ***Focal length***

How strongly vanishing points converge, Focal lengths longer or shorter than what is similar to the human eye can suggest a viewpoint that is not specific to an individual.

### ***Form Shadow***

The absence of light where form turns away from the light source.

## G

### ***Gesture***

Compression and subordination of small elements to a simpler element, such as beads along a string. Can be used to refer both to the abstract composition as a whole and to elements within a composition.

## H

### ***Hierarchy***

A method of organization with cascading degrees of importance.

### ***Hue***

Color as determined by wavelength of light. For example, red, yellow, blue, etc.

### ***Hue shift***

Change in color from light mixing.



## K

### **Key light**

The main or most powerful light source in a scene.

## M

### **Magic value**

The value where one object is the same as another. The relationship can help determine a starting point for a value structure. *See: reference point*

### **Metal material**

A material that only has specular reflection. Due to unique properties of some metals, this reflection may be tinted with a color.

### **Mud**

A way to refer to inaccurate relationships in hierarchies of contrast, usually referring to value in the context of painting.

## O

### **Optical**

Subjective information from one viewpoint and usually one moment of time. Includes areas such as 2D shape design and accuracy. Exists on a hierarchy between conceptual and optical in drawing.

### **Overcast**

A lighting condition where light is scattered to a high degree minimizing contrasts of light and shade and accentuating local color, ambient occlusion, and silhouette. *See: direct light*

## P

### **Penumbra**

The softest part of a cast shadow.

### **Plane**

A simplified conception of form to include flat surfaces making it easier to calculate reflections.

### **Point light**

A source of light that emits light rays equally in all directions, like a lightbulb.

### **Point of view**

The perspective from which a painting is viewed. Common point of views are first person, third person limited, third person omniscient.

## R

### **Reference point**

Information that is known to be correct and is then used as a basis for further decisions.

### **Reflected light**

Light that bounces from one object's lit surface into the shadowed area of another object.

### **Relative**

A way of working by comparing and expressing relationships.

## S

### **Saturation**

The distance from grey of a given hue.

### **Shape**

One of the major building blocks of composition, an area of controlled contrast that can be distinguished as a self-contained discrete element or field. Can be expressed abstractly through outline or visually through mass and tone. Areas of similar tone will merge to an abstract 2D shape. Can suggest and be informed by 3D form. *See: optical*

### **Shorthand**

Suggestion of relationships through abbreviated note taking.

**Structure**

A concept in drawing related to the description and organization of space. Can refer to 2D structure, as in the abstract gesture of a composition, and also 3D structure, describing how form sits in space.

**White light**

Light that contains a combination of all visible wavelengths.

**T****Temperature**

A property of color, how warm or cool a color is relative to another.

**U****Unity**

A state of low contrast. Exists on a hierarchy between unity and variety in drawing.

**V****Value**

An element of painting, contains a hierarchy from dark to light. Value decisions also determine drawing decisions.

**Variety**

A state of high contrast. Exists on a hierarchy between unity and variety in drawing.

**Visual idea**

An idea that is best expressed through the visual language using relationships that are experienced graphically.

**Visual language**

A collection of tools used for communicating visual ideas.

**W****Wavelength**

The distance between peaks of a wave, determines what color the brain perceives.



# RESOURCES

## RECOMMENDED READING

Harold Speed *The Practice and Science of Drawing, Oil Painting Techniques and Materials*  
John H. Vanderpoel *The Human Figure*  
Solomon J. Solomon *The Practice of Oil Painting and Drawing*  
James Gurney *Color and Light: A Guide for the Realist Painter*  
Robert Fawcett *On the Art of Drawing*  
Steve Huston *Figure Drawing for Artists*  
John Collier *A Manual of Oil Painting*  
Frank Fowler *Drawing in Charcoal & Crayon*  
Evan Charteris *John Sargent*  
John Milner *The Studios Of Paris: The Capital Of Art In The Late Nineteenth Century*  
Andreas Bluhm *Light!: The Industrial Age 1750-1900, Art & Science, Technology & Society*  
Emmanuel Schwartz *Gods and Heroes: Masterpieces from the Ecole des Beaux-Arts, Paris*  
Mau-Kun Yim *Lessons in Masterful Portrait Drawing: A Classical Approach to Drawing the Head*  
Richard Schmid *Alla Prima: Everything I Know About Painting*  
Rosemary J. Barrow *Lawrence Alma Tadema*  
Marcos Mateu-Mestre *Framed Ink/Perspective/Drawing Series*

## RECOMMENDED VIEWING & FURTHER RESOURCES

Craig Mullins  
*Gnomon Masterclass: Traditional Art Values Applied to Digital Art*  
*Schoolism: Digital Painting with Craig Mullins*  
  
Craig Mullins  
*Sijun Posts*  
<https://archive.org/details/CraigMullinsSijunPosts>  
  
David Apatoff  
*Illustration Art Blog*  
<http://illustrationart.blogspot.com/>  
  
David Briggs  
<http://www.huevaluechroma.com/>  
  
Ramón Hurtado  
*Academic Drawing in 19th Century Paris: A Case Study*  
<https://www.youtube.com/watch?v=mzhwArbLoOs>  
  
James Gurney  
*The Windmill Principle*  
<http://gurneyjourney.blogspot.com/2008/04/windmill-principle.html>  
  
Bruce MacEvoy  
*Perspective in the World*  
<https://www.handprint.com/HP/WCL/perspect1.html>